TECHNOLOGY DEPT.

TELEPHONE ENGINEER

and Management

JUNE 15, 1942

BITS AND PIECES ONLY?

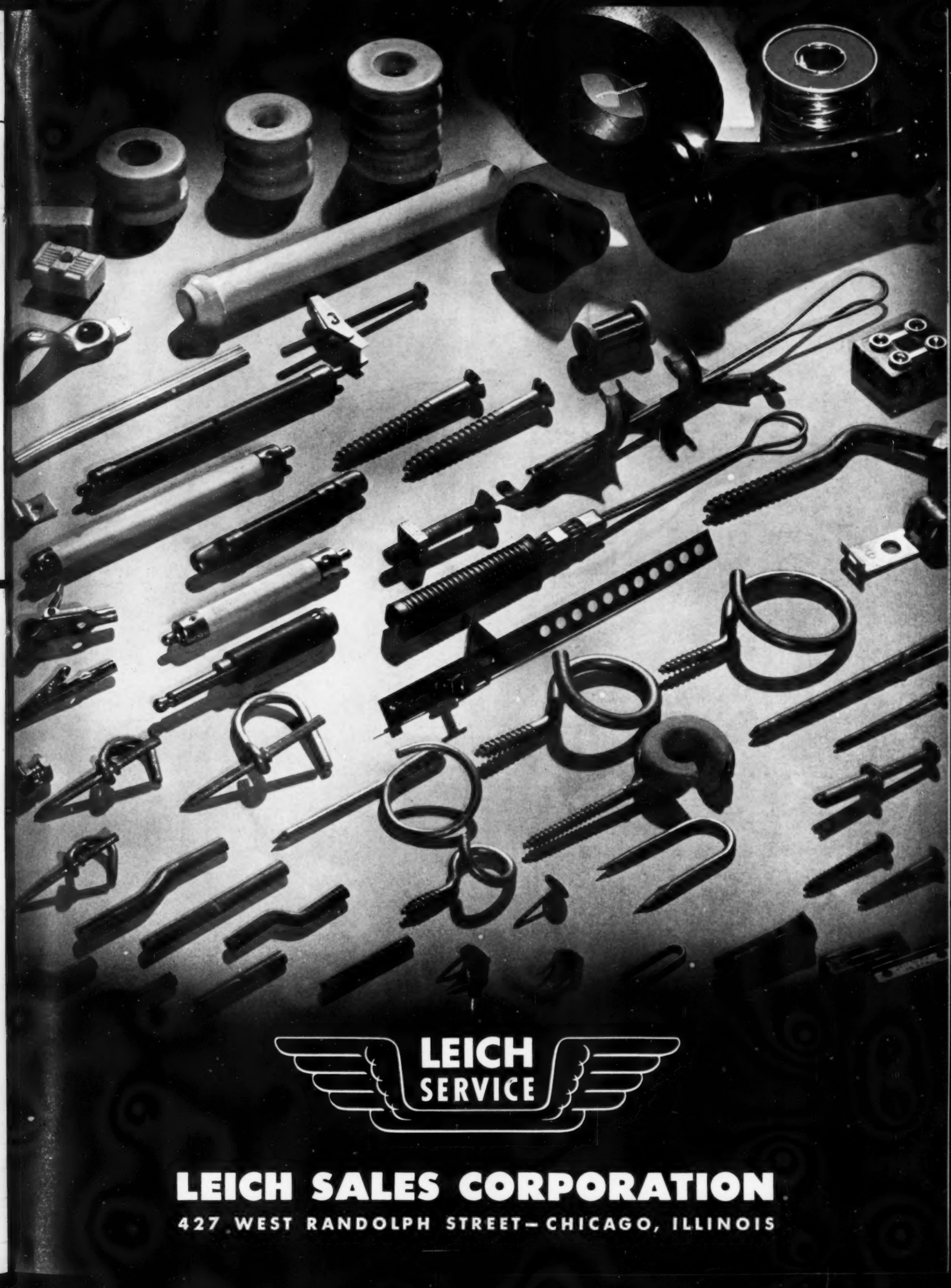
CERTAINLY!

BUT—

QUALITY BITS AND PIECES

Confronted with the war-winning necessity of confining their efforts to repair, more repair, and still more repair, telephone plant men nevertheless face the future with confidence. They know that they will continue to provide — as they have in the past—facilities for the finest telephone service in the world.

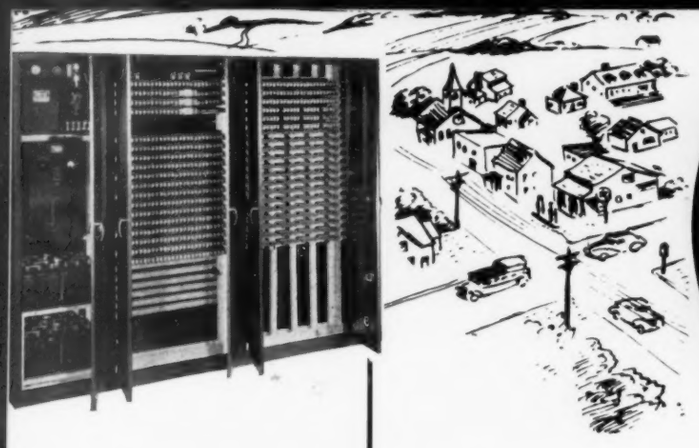
Similarily, and to the same end, the Leich organization must necessarily limit its normal comprehensive supply service to "bits and pieces" so that vital war materials will be conserved. Leich, however, pledges that in supplying these "bits and pieces" there will be no slackening of effort to give the best possible service and that Quality will continue to be the distinguishing characteristic of every Leich-Distributed product.


LEICH
SERVICE
LEICH SALES CORPORATION
427 WEST RANDOLPH STREET—CHICAGO, ILLINOIS

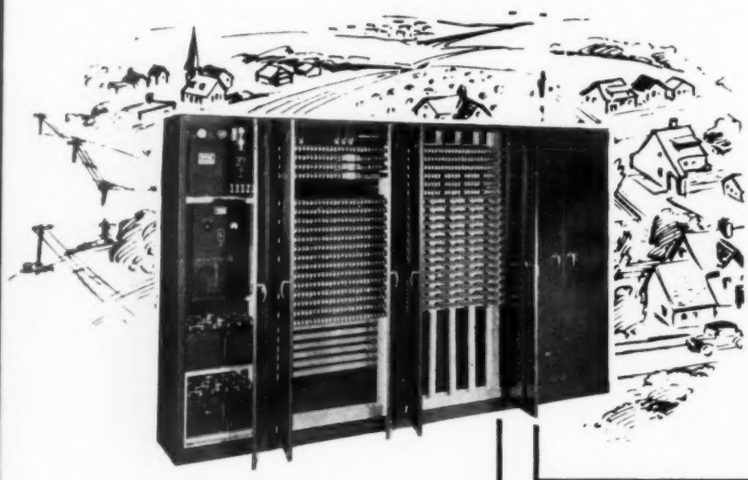
HOW THE ALABAMA T

MORE THAN D

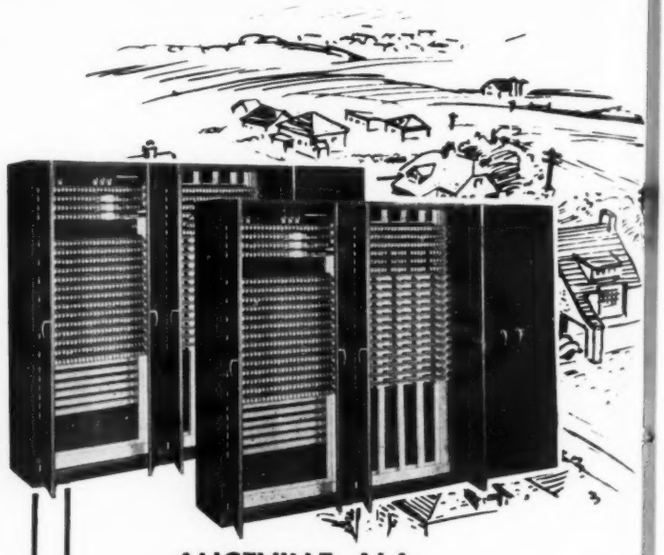
WITH THE HELP OF K



GORDO, ALA.
Kellogg 50-Line
elaymatic Switchboard



CARROLTON, ALA.
Kellogg 100-Line
Relaymatic Switchboard



ALICEVILLE, ALA.
Kellogg 200-Line
Relaymatic Switchboard

This is the

RELAYMATIC NETWORK

That Played a Vital Part in Remarkable Earnings Record

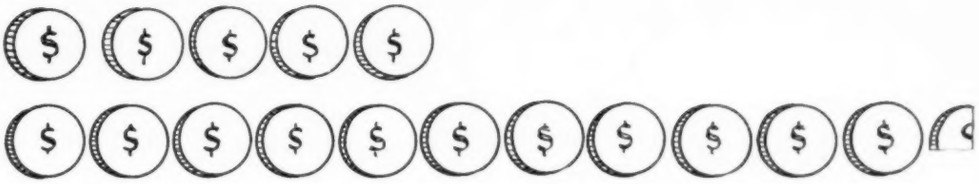
Through the installation of three Kellogg Relaymatics, the Alabama Telephone Company was aided in doubling its income from the Pickens County Group. These Relaymatics feed into a Kellogg Masterbuilt Switchboard which serves as the toll center and provides supervision and information service for the other three communities. The Relaymatics are simply designed, ruggedly constructed and capable of giving the finest service on a 24-hour basis without operator attendance. These installations at the three towns shown, have proved highly satisfactory from the standpoint of economy and practicability.

TOLL CENTER AT
REFORM, ALA.
Kellogg 2-Position
Masterbuilt Switchboard

MA TELEPHONE CO., (PICKENS COUNTY GROUP)

N DOUBLED INCOME

OF KELLOGG RELAYMATIC SWITCHBOARDS



The remarkable gain in income and subscribers recently shown by the Pickens County Group of the Alabama Telephone Co. is a dramatic demonstration of what happens when telephone men combine energy, vision and the right equipment.

When H. W. Vaughan and J. N. Cox, Jr., purchased this telephone property, they immediately began a comprehensive rehabilitation program. A major factor in that program was the installation of the network of Kellogg Relaymatic Switchboards described on the opposite page. This set-up, engineered in co-operation with Kellogg representatives, contributed largely to the spectacular gains recorded over a 45-month period: *income more than doubled and the number of subscribers increased by 83.6 %.*

The company's foresight in selecting Kellogg Relaymatics is paying double dividends now. For in addition to helping build business to its present level, these Relaymatics can be relied upon to continue to operate economically and with a minimum of attention . . . not only "for the duration" but for a good long period after the emergency ends.

KELLOGG SWITCHBOARD & SUPPLY CO. • CHICAGO

HERE ARE THE MEN BEHIND THE PROJECT

H. W. Vaughan
President

J. N. Cox, Jr.
Sec'y.-Treas.

Meet the Alabama Telephone Co. men whose energy and foresight turned a mediocre property into a high income-producing operation. Their first step after purchasing the property was to map a reconstruction program including plant rebuilding and installation of new poles, cables, telephones and switchboards. The soundness of their program and choice of equipment was amply rewarded when a comparison of income and subscribers over a 45-month period showed gains of 125% and 83.6% respectively.

KELLOGG

EXTRA EDITION

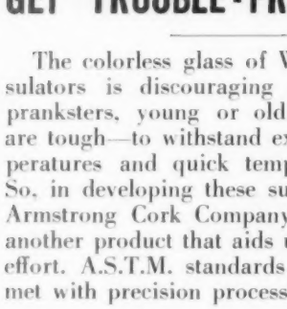
Telephon

An Advertisement of Leading Supply Manufacturers Whose Produ

KELLOGG LOGICAL PLACE

"WT" GLASS INSULATORS HOLD BREAKAGE MINIMUM; GET TROUBLE-FREE SERVICE

The colorless glass of Whitall Tatum Insulators is discouraging as a target for pranksters, young or old. Moreover, they are tough—to withstand extremely low temperatures and quick temperature changes. So, in developing these superior insulators, Armstrong Cork Company has contributed another product that aids uninterrupted war effort. A.S.T.M. standards of efficiency are met with precision processing of high quality ingredients. They are actually stronger than standard steel supporting pins used in tests. When you specify "WT" Insulators, you're assured of top-notch, trouble-free performance.



ODD.....BUT TRUE !

BAD GUESSES RESULT IN NEW INVENTION! MANY'S THE TIME THAT TELEPHONE POLES HAD TO BE RETURNED AND REPLACED WITH LARGER ONES BECAUSE THEY WOULDN'T PROPERLY CLEAR SHADE TREES. NOW THE MATTHEWS TELEHEIGHT SCIENTIFICALLY PREVENTS GUESSING WRONG !
A
B
C
D
HEIGHT OF A = CD + BC
2½ TIMES AS STRONG AS BB WIRE, CRAPO HTL 135 TELEPHONE LINE WIRE ALSO HAS APPROXIMATELY 5% LOWER TRANSMISSION LOSS PER MILE !
CHINA'S FIRST
KELLOGG
RADIO BROADCASTING STATION WAS OWNED AND OPERATED BY KELLOGG

Indiana Crapo Line Wire Lowers Maintenance Costs

The remarkably high tensile strength of Indiana Steel and Wire Company's new line wire is a real contribution to our war economy. Crapo HTL-85 High-Tensile Low Resistance Line Wire permits as much as 225 foot spans in heavy loading districts. Crapo HTL-135, still stronger, permits 350 foot spans in heavy loading areas. The saving in maintenance cost on existing lines and on poles and construction time on new lines is a vital one these war times, when skilled labor is scarce and all critical materials must be conserved.

Ironite Drop Wire Is The Perfect War Item

You are trying your best to maintain your most efficient service, and at the same time conserve critical materials needed in the war effort. Then add Ironite Drop Wire to your "must use" items. It has an honorable service record from World War Number One, and is now once more enabling telephone men to retain service efficiency but at the same time use less material. Ironite Drop Wire . . .

Is unusually strong—resists sleet loads on long spans; Has high conductivity—Ironite No. 18 BWG is equal to No. 22 B&S copper in drop wire lengths; Has insulation with 10 times required dielectric qualities; Is flexible—works and ties easily.

To help you meet rigid budgets in replacements you will find Ironite most reasonably priced. Specify Ironite Drop Wire for good service and low cost.

Raytheon RectiFilteRs Are Preferred Battery Eliminators

The modern economical way of furnishing telephone D. C. power is to convert A.C. direct to D.C. with Raytheon RectiFilteRs. They improve telephone service by providing full D.C. power for the best operation of the telephones and they pay for themselves out of savings. These facts have been definitely established by reports from the hundreds of installations in all parts of the country.

You can end your telephone power problems with RectiFilteRs. Just plug in, close the door and forget it. There is a size to meet your particular requirement. Send for complete details and prices.

...one Facts

EXTRA EDITION

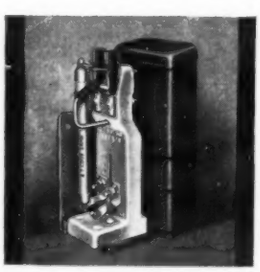
...se Pro... Distributed by the Kellogg Switchboard and Supply Company

...CE TO BUY LINE SUPPLIES

SPLICE EASILY WITH NATIONAL'S NICOPRESS QUICK REDUCING SLEEVES

The quickest and best way to splice wires of two different sizes is by using National Telephone Supply Company Reducing Sleeves. Splices thus made equal or exceed the rated breaking strength of the conductors. The splices are so tight the conductors cannot pull out. Your linemen will like these efficient aids because the job never has to be done over. In times like these when nearly every line crew is shorthanded, every job done should be done for good—that time be conserved for additional work. There is a wide range of sizes.

Type "O" Sub-Station Protector Is Most Vital in War-Time



Like all types of equipment guarding against interruptions of wartime telephone systems, the Type "O" Sub-Station Protector of Cook Electric Company is especially important today. Because of its convenience and dependability, it is standard equipment for many successful operating companies. This protector is suitable for indoor and outdoor installation. It has an indexing mounting bracket which makes it possible to install the bracket separately and allows the protector unit to be turned on the bracket for convenient wiring. It also has Tru Gap lightning discharger, fuse protection, non-corrosive cover and phosphor bronze fuse clips.

Conserve Your Phones With Kellogg Koiled Kords

Not only is it war economy to avoid telephone breakage, but it prevents war-effort delays. So install Kellogg Koiled Kords wherever you can. They do not become tangled with desk corners and drawers or things on the desk. They stretch easily from 9 inches to as much as 60 inches—and never kink when the receiver is replaced. Your customers always welcome the relief from irritation and lost time. The retractable action of Kellogg Koiled Kords is secured by moulding the outer rubber covering into the coiled shape, thus eliminating the use of springs, formed wires, rubber bands, etc. Because of the outer rubber covering, there is no braid to wear out. Write for circular.

MATTHEWS SCRULIX ANCHORS ARE SAVING VALUABLE WAR TIME AND MINIMIZING MAINTENANCE

When war's demands make it more and more difficult to keep veteran construction and maintenance crews, Matthews Scrulix Anchors are really vital. Great holding surface makes these anchors well suited to most types of earth and thousands are in use throughout the world. For economy and convenience—specify Matthews Scrulix Anchors on your next order for screw type anchors. You will be pleased at the saving in installation time. Scrulix Anchors are available in grey or malleable iron in all sizes.

Combination of Best Materials and Satisfying Service Is Hard to Beat

Buying line supplies is a man-sized job. The wise buyer knows that he can gain a lot more satisfaction if he is very careful to pick a source for his line supplies that will make his job easier. There are many things to be taken into consideration.

First of all, the quality of the materials should be right for the job. Kellogg's judicious pre-selection of the best materials made by well-known manufacturers is the telephone man's assurance of getting materials that will last and do the job they're designed to do.

Then, the kind of service counts. A vast coast-to-coast warehousing system of over 50 strategically located stockrooms is maintained by Kellogg in order that line supplies may be shipped with all speed and efficiency.

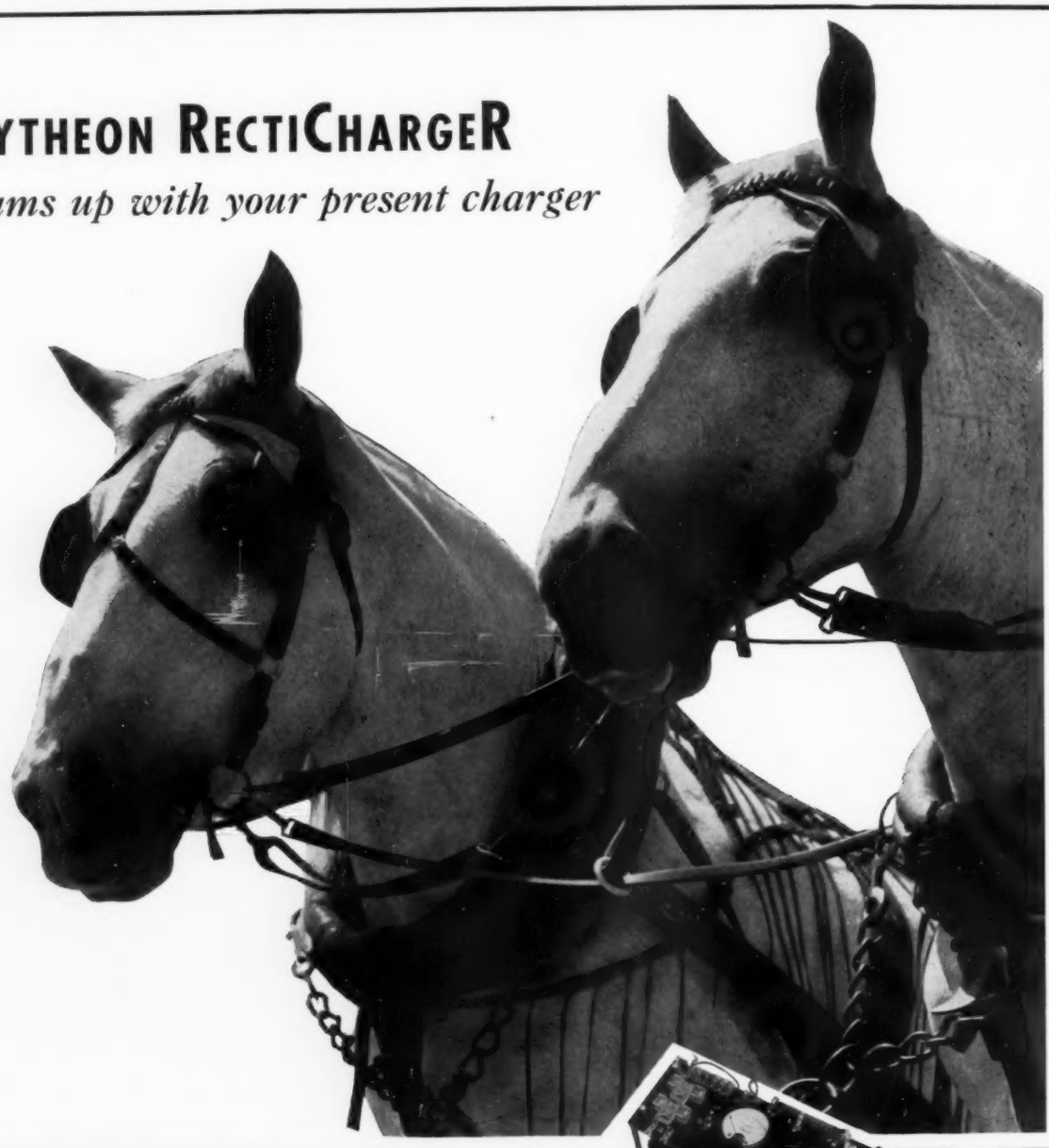
That orders are handled intelligently, by experienced people is also important. Every line supply order that comes to Kellogg is filled under the direct supervision of experienced telephone men, whose judgment and knowledge of outside plant work is of invaluable aid.

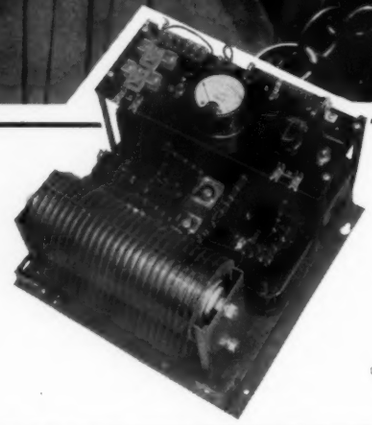
Phone men like to deal with a company that stands behind their products. When they buy from Kellogg, they *know* this. Every Kellogg line supply item is DOUBLY guaranteed. First by Kellogg, and secondly by the manufacturer.

With such facilities and experience, Kellogg is the logical place to come for faster, more satisfying line supply service.

RAYTHEON RECTICHARGER

Teams up with your present charger





View of RectiChargeR with cover removed

TRAFFIC is increasing and probably you will need more power plant capacity. The thrifty way to get it is to add a Raytheon RectiChargeR to your present full wave constant current charger (regardless of make). This doubles capacity and changes your charger to the preferred constant potential or follow-the-load type.

Typical example—

Present Charger 6 Amps. Constant Current DC
+Raytheon RectiChargeR 6 Amps. Constant Potential DC
=New Power Plant 12 Amps. Constant Potential DC

Everyone wants constant potential charging. It usually increases battery life. The difficulties of under and over voltage are eliminated, such as short lamp life, frying transmitters and sticking relays.

Write now for your copy of our literature.

RAYTHEON MANUFACTURING COMPANY
190 WILLOW STREET, WALTHAM, MASS.

My present charger is rated.....Volts.....Amps. Tell me how to add a Raytheon RectiChargeR and get constant potential charging.

Name.....

Address.....

TE

"Essential Service still Available when I Leave!"

Plants working 24 hours a day Supplement their P.B.X. Service with a Stromberg-Carlson

CONVENIENCE SYSTEM

KEEP 'EM TALKING

Stromberg-Carlson Convenience Systems are important helps to Defense production. When used as satellite systems working into P.B.X. switchboards, these systems are particularly useful for intercommunication between departments, and also for giving important executives 24-hour telephone service.

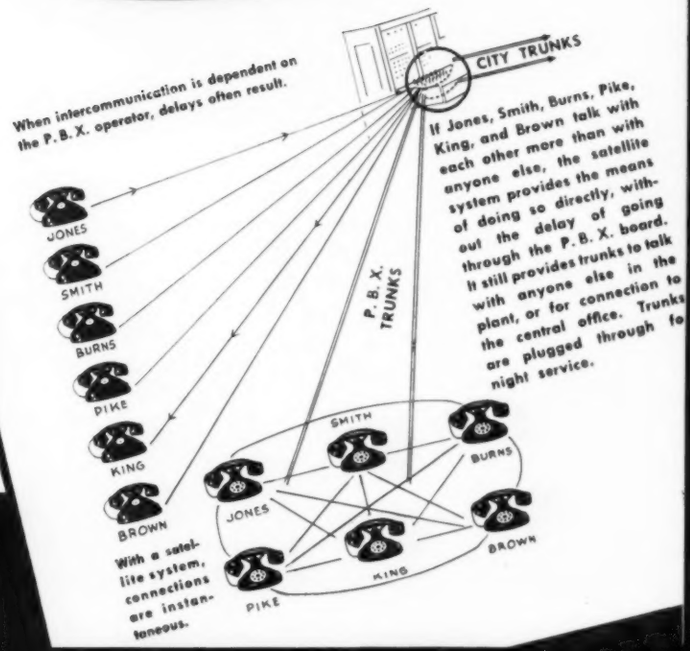
When the Day Shift leaves and the Night Shift comes on, P.B.X. trunks connected to the convenience system may be plugged directly through to the city exchange.

One of the Stromberg-Carlson Convenience Systems ideally suited to the purpose is the 7-6 System. The 8 buttons on each telephone perform the following functions:

1 button controls an individual, private trunk from every local station to the P.B.X.; 1 button controls a trunk which is common to all 6 stations, also terminating at the P.B.X.; 1 button holds either trunk, and 5 buttons control the individual six stations for communication between themselves, wholly independent of the P.B.X. switchboard.

Write for illustrated literature.

STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY
Factory and General Offices: 100 Carlson Road, Rochester, N. Y., U. S. A.
Branch Offices: Chicago Kansas City San Francisco Toronto


When intercommunication is dependent on the P.B.X. operator, delays often result.
CITY TRUNKS
JONES
SMITH
BURNS
PIKE
KING
BROWN
P.B.X. TRUNKS
If Jones, Smith, Burns, Pike, King, and Brown talk with each other more than with anyone else, the satellite system provides the means of doing so directly, without the delay of going through the P.B.X. board. It still provides trunks to talk with anyone else in the plant, or for connection to the central office. Trunks are plugged through for night service.
With a satellite system, connections are instantaneous.

Stromberg-Carlson

There is a story behind the article on page 21 of this issue. Walter Herrman called the writer about the manuscript and you can imagine our surprise when we found the Editor of our contemporary was to also get a copy. However, after reading it both publications were so enthused over the value of the paper on Regulation to our industry we decided to each run it in our separate publications. If other articles come from the pen of Mr. Herrman on such timely subjects we believe further publication in both journals is justified.

▼

To Emil Engsberg of the Commonwealth Telephone Company, Madison, Wisc., goes our thanks for his statement to us during the recent Wisconsin convention at Milwaukee. Emil gave me the good news that he had found our BLUE BOOK number of January 15 so valuable that he kept it on his desk at all times. Our thanks, too, to Walter Dakin and Louis Pitcher for commending the telephone trade press to Wisconsin phone men.

▼

We are indeed sorry we have not been able to attend so many of the state conventions this year. Several Chicagoans left for the West Coast as this is being written but it is our bad luck not to have been among them. We do thank Leslie Gritten of Oregon and Charles Mason of California for the invites and ask for a rain check.

Ray

TELEPHONE ENGINEER

MANAGEMENT • ENGINEERING • MAINTENANCE

Vol. 46, No. 6 JUNE, 1942

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SERVING THE FIVE BILLION DOLLAR TELEPHONE INDUSTRY

Founded in 1909

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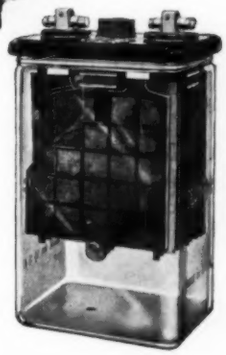
Upholding a telephone tradition

Keeping pace with a full-speed war!

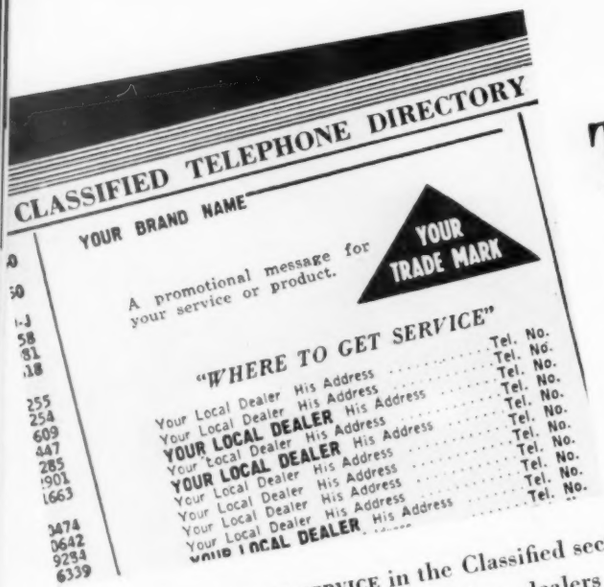
War isn't fought slowly . . . not nowadays! The thrust and parry of attack and defense can move at 40 miles an hour, if need be. Think of that . . . and you know why the telephone is the number one messenger of Mars.

In war as in peace, the telephone meets all demands made of it . . . and Exide Telephone Batteries are there to help. Whether emergency reserve, signalling, P.B.X. or common battery, there's an Exide to do the job, and help keep America's armed forces rolling.



Exide
TELEPHONE BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia
The World's Largest Manufacturers of Storage Batteries for Every Purpose
Exide Batteries of Canada, Limited, Toronto


CLASSIFIED TELEPHONE DIRECTORY
YOUR BRAND NAME
A promotional message for your service or product.
YOUR TRADE MARK
"WHERE TO GET SERVICE"
Your Local Dealer His Address Tel. No.
Your Local Dealer His Address Tel. No.
YOUR LOCAL DEALER His Address Tel. No.
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Trade Mark Service helps your dealers "CARRY ON"

TRADE MARK SERVICE in the Classified section of Telephone Directories helps dealers whose stocks of new products are running low by bringing them more service business.

The use of the Classified to find where to get service for household appliances, cars, etc. is a national consumer habit. You and your dealers capitalize on this when your trade mark is displayed, with local authorized outlets underneath, in Classified Directories covering your markets. Then people, needing service or a new product, will easily find your authorized dealers.

Look into this plan which promotes good public relations—and at the same time helps hold your dealer organization together.

Just call your telephone company and ask for the Directory Advertising Representative.

MANUFACTURER'S REPRESENTATIVE TO DEALER:
"Arrange to have your name under our trade mark and you'll get more service business."

HOUSEWIFE:
"Please send a service man!"

Telling BOTH SIDES of a SERVICE STORY

The two advertisements reproduced here appear in current magazines. One tells manufacturers now engaged in war work how to use the Classified to maintain good customer relations and help their dealers carry on. The other reminds consumers that the Classified is a convenient guide to find where to buy products and where to get service.

Such messages promote the Classified as a worth-while advertising medium and stimulate its use. They should benefit the entire telephone industry.

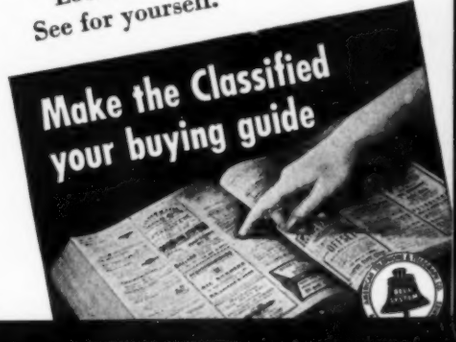
AN ADVERTISEMENT OF THE BELL TELEPHONE SYSTEM

MORAL: *When you want a screen for a window, fire-place, or movie projector, look in the Classified.*

You save a lot of time and energy when you look in the *Classified* section of your Telephone Directory before you buy things or have them repaired.

You get useful shopping information about local tradespeople through the *Classified*. Many of them tell whether they deliver, whether their service men are factory-trained, what hours their stores are open.

Look in the *Classified* now. See for yourself.



"These Long-span Service Drops Stand on Their Record

". . . they are no problem. High tensile MONOTYPE DROP WIRE withstands the 'full 200-lb. test'. With a high-grade rubber insulation, tightly braided, pitch and mica finished, it is weather and abrasion resistant. For long service – for low cost per year – there's nothing better." That's on the record.

MONOTYPE DROP WIRE

Manufactured by

GENERAL CABLE CORPORATION

DISTRIBUTED BY

AMERICAN AUTOMATIC ELECTRIC SALES COMPANY

1033 WEST VAN BUREN STREET · CHICAGO, ILLINOIS

BRANCH WAREHOUSES AT DALLAS, KANSAS CITY, LOS ANGELES, RICHMOND (VA.) AND SAN FRANCISCO

THE PIONEER'S CORNER

Should the Independent Pioneers go forward in war times? The question has been raised properly enough whether activities on the part of the Independent Pioneer Telephone Association should not be suspended during the duration of the war.

The Executive Committee in session in Chicago during the Spring Conference devoted considerable time to this question and were unanimous in saying that the Pioneer program should go forward without regard to the war situation. This means that the purposes and program of the Pioneers Association are in no way harmful or detrimental to the successful conduct of the war; in fact, there are few people better equipped to discuss and help in war work than these experienced telephone men and women.

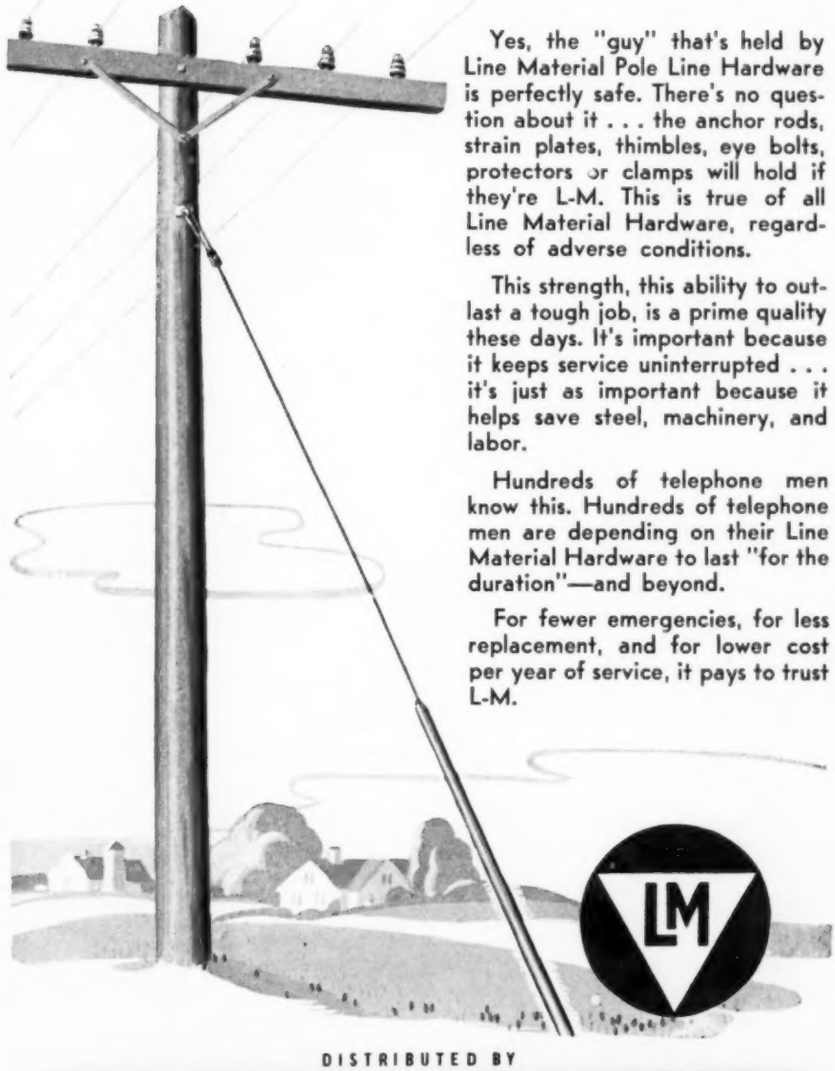
If the civilian aid program of the Government needs encouragement and assistance, who can better provide these than the telephone pioneers? If the morale of telephone workers and of citizens in general needs inspiration and encouragement, who is better equipped to help in that direction than the pioneers?

From every viewpoint the Executive Committee felt that in spite of the war the telephone people who can qualify by the necessary years of service should take an active part in promoting and helping the Independent Pioneer Telephone Association.

We solicit your suggestions. Why not write to J. K. Johnston, Secretary, 632 Lemcke Bldg., Indianapolis, Indiana?

J. H. Agee, President.

PICTURE OF ONE "GUY" THAT DOESN'T HAVE TO WORRY



Yes, the "guy" that's held by Line Material Pole Line Hardware is perfectly safe. There's no question about it . . . the anchor rods, strain plates, thimbles, eye bolts, protectors or clamps will hold if they're L-M. This is true of all Line Material Hardware, regardless of adverse conditions.

This strength, this ability to outlast a tough job, is a prime quality these days. It's important because it keeps service uninterrupted . . . it's just as important because it helps save steel, machinery, and labor.

Hundreds of telephone men know this. Hundreds of telephone men are depending on their Line Material Hardware to last "for the duration"—and beyond.

For fewer emergencies, for less replacement, and for lower cost per year of service, it pays to trust L-M.

LM

DISTRIBUTED BY

AMERICAN AUTOMATIC ELECTRIC SALES COMPANY

1033 WEST VAN BUREN STREET · CHICAGO, ILLINOIS

BRANCH WAREHOUSES AT DALLAS, KANSAS CITY, LOS ANGELES, RICHMOND (VA.) AND SAN FRANCISCO

"HOW HANDSOME HE LOOKS!"

"YES, HE'S JUST HAD A T-C TRIM"

Something that has often been noted about Taylor Colquitt poles is their clean, straight beauty. It's no accident either. Aside from being carefully selected, properly seasoned and thoroughly creosoted by the Taylor Colquitt method every T-C Pole is painstakingly trimmed in a special trimming machine.

Telephone men like to use T-C poles because they're easy to handle and they give an added margin of safety—for many years to come—regardless of termites, rot, fungi and other pole enemies.

DISTRIBUTED BY

AMERICAN AUTOMATIC ELECTRIC SALES COMPANY

1033 WEST VAN BUREN STREET · CHICAGO, ILLINOIS

BRANCH WAREHOUSES AT DALLAS, KANSAS CITY, LOS ANGELES, RICHMOND (VA.) AND SAN FRANCISCO

TROUBLE-SHOOTERS SAVE TIME 5 WAYS

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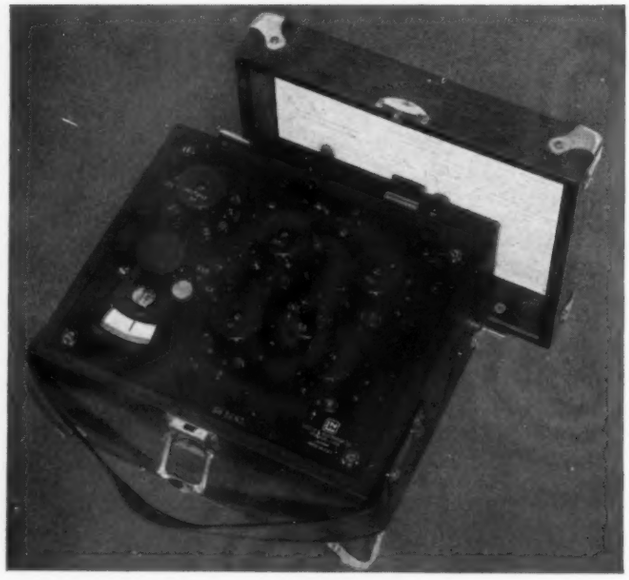

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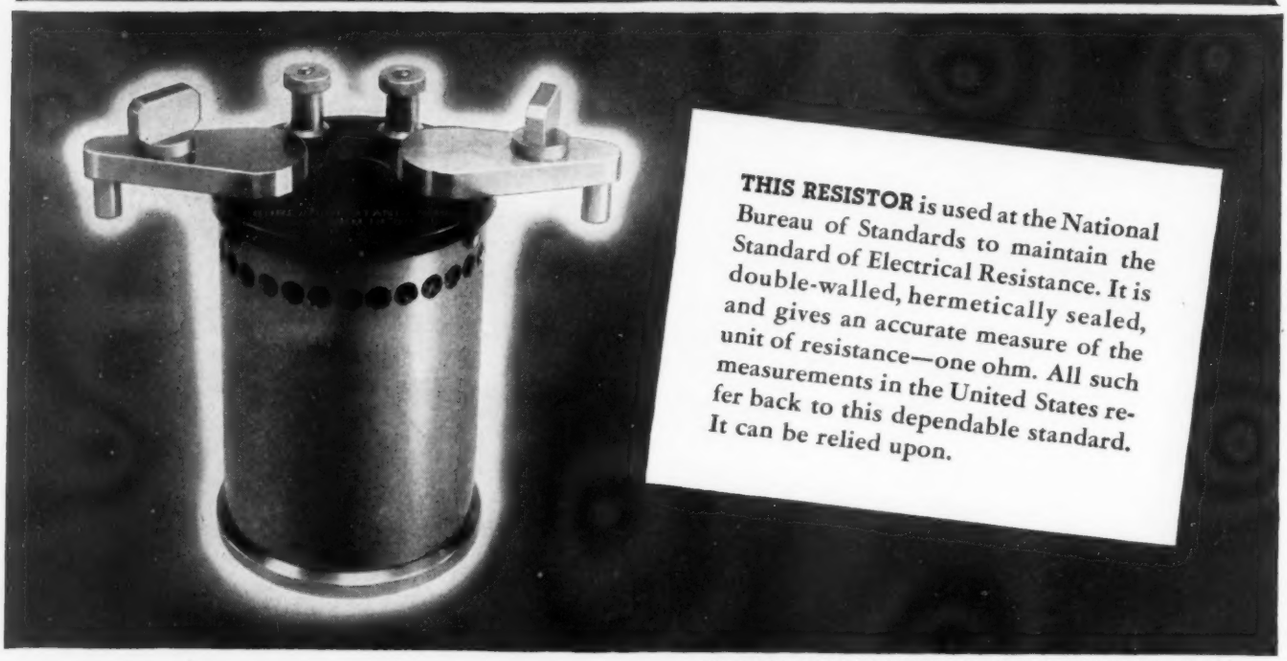

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LET'S GO! U.S.A. KEEP 'EM FLYING!

GO BY STANDARDS

Highlights of the Communications News

Important Communications developments of the past month, briefed for busy readers

by

ROLAND C. DAVIES
Editor, Telecommunications Reports

WITHIN the next month or two the Army Signal Corps and Naval Communications leadership hopes to complete to a major extent its final tightening up of the arrangements and operational machinery of the communications systems required for the war effort in the United States for the remainder of this year's needs. The telephone services and facilities play a most important role in the planning.

The immediate result of this program is to be the conversion to the fullest extent of the telephone manufacturing industry into production for the armed services. The Army Signal Corps is slated to call upon the telephone manufacturing companies for a tremendous amount of apparatus and equipment, especially in the field telephone category. Besides the requirements of the American Army and, to a lesser extent, the Navy, the needs of the armed forces of the United Nations will be a huge program of production under the Lend-Lease plan.

Manufacturers Committee

The conversion of the telephone manufacturing companies into complete war production had its course paved during early June when the Communications Branch of the War Production Board organized a Telephone Equipment and Supplies Manufacturers Industry Advisory Committee, representing the Western Electric and all Independent manufacturers. This Committee, which held its first meeting June 4 and is to stage another session July 15, is composed of President F. R. McBerty of the North Electric Company; Vice President J. W. Shipman of Automatic Electric Company; President M. K. McGrath of the Kellogg Switchboard and Supply Company; Asst. Treas. A. F. Gibson of the Stromberg-Carlson Telephone Manufacturing Company; President Walter Hasselhorn of the Cook Electric Company; President W. L. Runzel of the Runzel Cord and Wire Company; Vice President R. W. Siemund of the Leich Sales Corporation; Vice President R. A. Gantt of the International Standard Electric Corporation; and Fred Clarke, Merchandise Manager of the Western Electric Company. Bruce H. McCurdy is the government presiding officer.

The main subject considered at the first meeting of the Committee was the WPB order, then being framed, under which the telephone manufacturing industry activities and production for civilian telephone service will be limited to maintenance and repair equipment and to imperative essential civilian facilities. The telephone manufacturing facilities will be wholly devoted to military production except for these two functions for civilian requirements. This order was characterized as the "manufacturing freeze" mandate of the WPB and follows largely the aims of curtailing to the bone of civilian telephone operations, just as was promulgated for the radio broadcasting industry under recent orders of the DCB and FCC.

Bruce H. McCurdy, is the government presiding officer over the new Telephone Equipment and Supplies Manufacturers Industry Advisory Committee.

WPB Rulings P-129, P-130

THE WPB Communications Branch during early June issued two important rulings for the telephone industry in connection with its trio of orders, promulgated last April 23.

Most helpful to the industry was the postponement of the effective date of the Inventory Restrictions from June 1 to September first under the P-129 (Maintenance and Repair) and P-130 (Operating Construction Supplies) to enable the telephone companies to adjust their inventories, swollen as a result of increasing demands for service by war agencies, especially the armed forces. This means the telephone companies do not have to adjust their inventories as of June 1 to the requirement of 27½ per cent of their inventories in dollar value on the basis of their 1940 stocks of material. (A detailed statement on this deferment of the inventory restriction is published in this issue of TELEPHONE ENGINEER.)

Interpretation of L-50

IN THE first Interpretation of the amended L-50 Telephone Conservation Order, the WPB Communications Branch ruled that the preferred applicants for telephone service, including the Armed Forces and other war government agencies, who are in Schedule "A" of the amended L-50 order, MUST DEMONSTRATE THE SERVICE IS NECESSARY IN WAR OR ESSENTIAL PUBLIC ACTIVITIES AND MUST LIMIT THEIR DEMANDS TO MINIMUM REQUIREMENTS. Preferred telephone service applicants "cannot obtain telephone service merely on the ground that they are engaged in war or essential civilian work but also must show that the service desired is essential to the discharge of their responsibility for public health, welfare or security."

The Official Interpretation, issued by WPB Director of Industry Operations James S. Knowlson as an amendment of Section (b) (2) (i) of the General Conservation Order L-50 as Amended April 23, 1942, read as follows:

"The demands for service reasonably required by Persons engaged in direct defense or charged with responsibility for public health, welfare or security and required by those in the service categories of 'Schedule A' of that Order includes only such telephone service as is essential to such persons in

carrying on their direct defense activities or in the discharge of their responsibility for public health, welfare or security.

"The fact that an applicant for telephone service is engaged in defense activities or is within the service categories shown on Schedule 'A' or holds a position which carries with it responsibility for public health, welfare or security is not of itself determinative of such applicant's right for service unless, in addition, the telephone service requested is **essential** to such applicant in discharge of such public responsibility."

This means that government agencies, even though given the preferred status under Schedule A of the L-50 Order for telephone service, CANNOT ASK FOR MORE THAN THEY ABSOLUTELY REQUIRE AND CANNOT FORCE THE TELEPHONE COMPANIES TO INSTALL FACILITIES BEYOND THEIR MINIMUM REQUIREMENTS.

Materials & Manpower

ON JULY 1, the telephone manufacturing companies will begin to apply for their raw materials under the Production Requirements Plan. Copper is thought to be the first metal to be allocated under this program.

The War Manpower Commission had not finally approved the preliminary lists of critical occupations in war industries in which workers may be "frozen" in their jobs as this article was written. It was thought likely that WMC approval of the first lists would come at its next meeting.

There was thought to be a possibility that certain skilled workers in plants manufacturing specialized communications and aircraft warning equipment for the armed services would be included in the lists. Employers are to be asked not to hire any employee for the specified jobs except through the U. S. Employment Service, which might "freeze" workers in the posts.

It was considered improbable that skilled employees of telephone companies would be included in the first lists, as the FCC, through its staff and in conjunction with the DCB, has been asked to survey the field and advise the WMC which occupations are considered vital. As a result, certain telephone employment skills will probably be added to the lists in the future, as the WMC is expected to gradually broaden its controls.

Pensions Exempted

THE pension trust funds of the Bell System, together with similar pension plans of Independent telephone companies, will be exempted from income taxation under the new War tax measure, now being framed by Congress, as the result of a recent decision by the House Ways and Means Committee in its drafting of the revenue measure.

Although pension plans which are operated to favor executives and larger stockholders will be taxed under the amendment adopted by the House Ways and Means Committee, the Bell System Pension Plan will not be subject to any income taxation, it was viewed under the Committee's action. The Bell System Pension Plan was definitely placed within the scope of the two requirements to free its trust funds from the projected pension taxation. These requirements were that the pension plan to be exempt must cover 70% or more of all employees with five years or more of service, except casual, part-time and seasonal employees and that the determination of pension benefits should be based on a fixed percentage of wages, not being discriminatory even though it results in larger benefits to highly paid employees.

Convention Dates

California Independent Telephone Association, Miramar Hotel, Santa Monica, June 18 and 19.

Michigan Independent Telephone Association, Hotel Olds, Lansing, July 22 and 23.

Kentucky Independent Telephone Association, Henry Clay Hotel, Ashland, September 15 and 16.

United States Independent Telephone Association, Hotel Stevens, Chicago, October 13, 14.

Oklahoma Telephone Association, Mayo Hotel, Tulsa, Nov. 12 and 13.

Missouri Telephone Assoc., Muehlebach Hotel, Kansas City, Nov. 16, 17 and 18.

Interstate Rates

IN AN opinion of unequivocal language which was felt to bar definitely the FCC from any ambitions or attempts to impose its regulatory powers on interstate telephone rates connected in any way with exchange service, a three-judge Federal Court in Kansas City in the latter part of May ruled emphatically and specifically that Congress had completely contemplated and provided for the exemption of interstate interzone rates in exchange areas from Federal jurisdiction and supervision. The court stated it was issuing a permanent injunction decree to block the FCC from its mandate against the Southwestern Bell to force the latter to file interstate interzone tariffs for its Kansas City Exchange area.

Of much greater import at present than when the proceeding was commenced three years ago, the "per curiam" opinion handed down unanimously by the three Federal judges rejected the contentions of the FCC that it had the jurisdiction to regulate the interstate interzone rates of the Southwestern Bell Telephone Co., in the extended Kansas City exchange area, embracing the two Kansas Cities in Kansas and Missouri.

The FCC had held that it had jurisdiction in connection with the interstate interzone rates in extended exchange areas and, besides ordering the Southwestern Bell to file its rates in Kansas City had caused the Chesapeake and Potomac Telephone Co. to submit its rates in tariffs "under protest", covering interzone charges in its extended Washington exchange area in nearby Maryland and Virginia points. In addition, there had been an effort by the FCC in regard to the recent 15% Iowa rate increase, since withdrawn, to indicate jurisdiction over purely interstate exchange rates where exchanges in certain Iowa cities included the adjoining communities in another state.

Whether the FCC will appeal the finding to the U. S. Supreme Court has not yet been determined. However, there were some views in governmental circles that an appeal to the nation's highest tribunal might encounter tough sledding, because of recent Supreme Court decisions on Federal-State regulatory cases. Notably, the Supreme Court recently refused to review a Circuit Court decision which held in the so-called Safe Harbor case that the states, rather than the Federal Power Commission, by agreement—not even by a formal compact—could regulate interstate wholesale sales of electric power including that of Federal Power Commission licensees.

The Kansas City case has constituted a notable victory for E. W. Clausen, General Solicitor of the Southwestern Bell. He and H. M. Plotkin, chief of the FCC litigation section, had argued the case before the three-judge court last February. The court decision also supported fully the contentions of FCC Commissioners Case and Craven about the Congressional intent in their dissenting opinion to the Com-

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A New Approach

to

REGULATION

Walter J. Herrman

Facts Instead of Formulas May Provide Solution to Utility Rate Problems

We welcome in this issue a newcomer to the pages of TELEPHONE ENGINEER—Walter J. Herrman, Vice President of Telephone Bond and Share Company, as author of an article which goes direct to the heart of a problem vital to everyone connected with the utility industry—the problem of fair return.

It will not take the reader long to appreciate that Mr. Herrman's background prior to his association with Telephone Bond and Share Company was in the investment banking field, in connection with which he occasionally took time out to testify as an expert witness on public utility rate procedure. The thesis presented herein, which Mr. Herrman appropriately calls the "rule of necessity," was originally developed while on a special assignment with the Federal Communications Commission in 1937. What a utility should earn under some formula, it is pointed out, is abstract and theoretical; what it needs to earn to pay its bills and maintain its credit is real and practical, and unless it meets that need it cannot survive. The trend of such needs over the past few years is brought out in this article with alarming clarity, and the necessity for prompt and effective corrective measures is made very evident.

The importance of this subject seems to be of such magnitude that it has been considered advisable to include these articles in both of the large publications devoted to the Independent telephone industry.

THE perennial problem of the adequacy of earnings in the utility industry was again brought to the public attention by the recent Supreme Court decision in the matter of the Federal Power Commission vs. the Natural Gas Pipeline Company of America.

This decision, which comes at a time when utility equities are selling at unprecedented low prices*, has been hailed by some as the death sentence to the "fair value" language of the Smyth vs. Ames decision of 1898. As pointed out in a concurring minority opinion by Justices Black, Douglas, and Murphy, fair value, as defined under Smyth vs. Ames, is a function of earnings, and earnings, of course, are a function of rates, which, in turn, are based on value. The inference is that the resulting merry-go-round has no beginning or ending, and that once started in a given direction it tends to continue in the same direction until interfered with by some independent outside force. The minority opinion also infers the Court has now provided that outside force by freeing the Commissions from the "fair value" concept in the determination of a "fair return."

Actually the decision appears to be less specific than interpreted by the minority. What the Court did say was that the Constitution does not bind regulatory bodies to **any** particular formula. Whereas Smyth vs. Ames tried to guide the Commissions as to the elements of fair value—including such factors as original and reproduction cost, the market value of securities, and earnings—the present ruling seems to lend flexibility to the definition by permitting the Commissions to fit their procedure to the circumstances in each case and to exercise practical judgments so long as the results

* The Dow-Jones utility averages have recently declined to 35% under their 1932 lows, and even the best operating company stocks have been selling on a 14% earning price ratio basis.

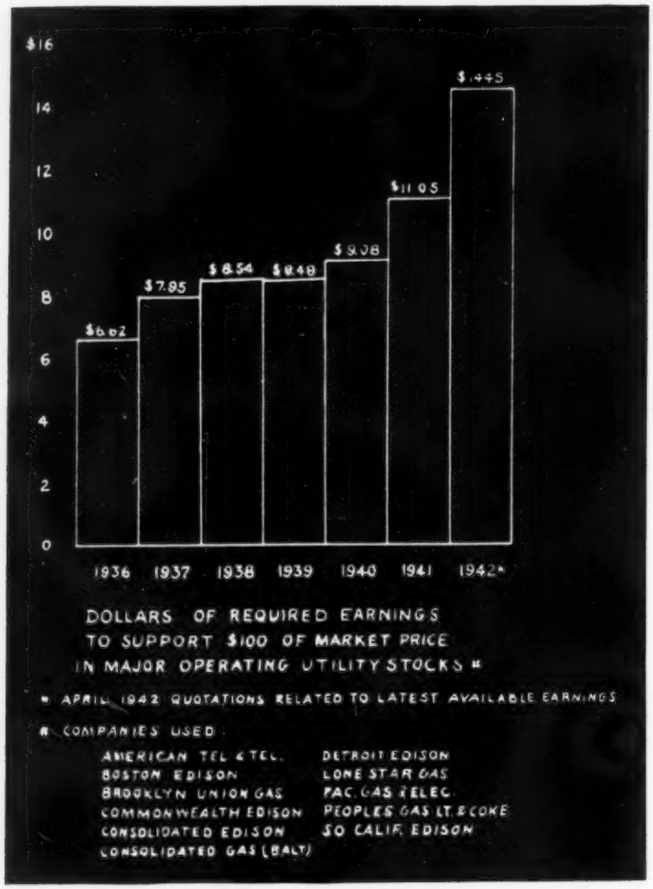

Chart A

do not confiscate property. Nothing is said to the effect that any certain element must be omitted, or any other given major weight.

Taken together, the decision itself, plus the minority interpretation, appear to be constructive. Obviously the contentions of Justices Black, Douglas, and Murphy have certain merit. Such factors as earnings and market values, and perhaps reproduction cost, might tend to create vicious spirals—in either direction—if these were the sole variables employed in fixing rates. The other side of the argument is that "value" itself is only half the answer and standing alone is quite meaningless in a rate proceeding. It is only when coupled with "rate of return" that "value" becomes significant. And the actual figures of "value" and "rate of return" must be considered as completely subordinate to their product—that final sum of money which the company in question is to be permitted to earn.

Economic Needs vs. A Hypothetical Formula

IN view of the new latitude extended by the Court in selecting proper yardsticks for this final determination it seems timely to give more careful attention to the very practical question of what a utility **needs** to earn as contrasted to what it may be **entitled** to earn under some hypothetical formula. The legal background to this aspect stems from the following language in the Bluefield decision when the Supreme Court said:—

"The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties."

Theoretical determinations of "value" and "rates of return" will probably always be useful in the regulation of utility properties, but economic history teaches us that in the long run the product of these two findings must be made to coincide with the single element of total return in the amount defined in the preceding paragraph. Unless the return is at least equal to such a sum, the enterprise must eventually become emaciated through lack of new capital. Any greater return appears unnecessary.

Viewed thus, on the basis of hard economic fact, it may be enlightening to examine the record of the utility industry with respect to its capital structure and the earnings required to support that structure over the past several years.

The Problem of Raising Utility Capital

IN the twenty year period 1910 to 1930 approximately 20 billion dollars of capital were expended by the utility industry to build power plants, transmission lines, substations, distributor systems, to develop new gas fields, to span the country with a network of long distance lines, and to modernize and triple in size the telephone facilities of the nation. Never in history has a single industry required so large a sum of money in so brief a period.

It is also worthy of note that these funds did not come to the utilities easily. This was a period of great competitive demand for very large quantities of money. It will be remembered that this was the time of the automobile, with the concurrent growth of the oil industry, to say nothing of the financing of the first World War, the post-war construction boom and tremendous loans to foreign nations.

In addition to the fact that an unusually large amount of money was required on which the annual turnover would be very low *, utilities were also handicapped by the limitation of profits under regulation. Few quarrelled with the premise that regulation of some sort was desirable, but regardless of pious sentiments the average investor was very reluctant to turn over his funds to a new industry unless there was some promise of greater profits than could be obtained from seasoned securities already outstanding.

Offsetting this negative consideration, there existed the apparent assurance that, while the machinery or regulation operated to restrict profits, it would on the other hand serve to maintain a return that was fair and reasonable. This argument carried great weight, particularly with buyers of senior obligations, and especially if combined with a six or seven percent return on a 50% or 60% mortgage. It also was used with success in the sale of high dividend rate preferred stocks to the utilities'

(Please turn to page 43)

* Utility revenues are usually quite low in relation to capital. By way of contrast, the average utility takes in about 15c or 20c a year in gross receipts for each dollar invested, whereas a manufacturing plant or store may "turn its capital" several times a year, taking in $5 or $10 of gross revenues for each dollar invested.

Wire Chief's TRAINING COURSE

SECTION XV

Subject: Aerial Cable Construction

(Prepared Expressly for TELEPHONE ENGINEER by the Lincoln Engineering School)

General

As has previously been stated cable studies must be made to determine the routing, size, and type of cable in advance of actual construction work. After this has been determined a cable working sketch showing the relationship between the existing and the proposed cable should be prepared.

Cable construction involves—

(1) The placing of supporting poles

(2) Attaching the necessary down-guys and installing anchors

(3) Placing messenger and pulling up to the proper tension

(4) Supporting the cable on the messenger either by the new Spinner method or by pulling it into rings attached to the messenger.

The Spinner method is now standard with some of the largest companies. Figure 2 illustrates how cable is supported by the Spinner method.

Principal Material Items Required in Cable Construction

Some of the principal material items (see Figure 3) required for cable construction—

Item	Use	Sizes and Types
Carriage bolt	Fastening brace to guard arm.	3-8 in. by 4 in. with 1-2 in. round washers.
Through bolts	Fastening suspension clamps, guard arms, extension arms, and crossarms to pole.	5-8 in. dia. 8, 10, 12, 14, 16 or 18 inches long.
Machine bolt	Fastening cable suspension clamp to extension arm, one only required.	5-8 in. by 5 1-2 ins. and 11-16 in. by 1 3-4 ins. round washer.
Extension arm	Supporting cable strand in locations where pole is not in line with other poles or where necessary to avoid obstacles.	Two types, for short and long suspension.
Double Arming bolts	Fastening two suspension clamps one on each side of pole when it is desired to carry two cables.	5-8 in. dia. in 8, 10, 12, 14, 16 or 18 in. lengths.
Square washers	Used with through and double-arming bolts.	2 1-4 in. by 2 1-4 in. by 3-16 in. with 11-16 in. hole.
Thimble eye bolts	Dead-ending strand.	5-8 in., 3-4 in., 1 in. dia., 8, 10, 12, 14, 16 or 18 inches bent or straight eye, for 6,000 10,000, and 16,000 lb. strand respectively.
Guard arm	On joint poles where clearance between cable and power wires is less than six feet.	48 ins. by 4 1-4 in. by 3 1-2 ins.
Guard arm brace	Bracing guard arm, one only required.	18 ins. by 1 1-4 ins. by 1-4 in. twisted steel.
Thimble-eye nuts	Dead-ending strand.	3-4in. and 1 in.
Curved washers	For thimble eye-bolts.	2 1-2 ins. by 2 1-2 ins. by 3-16 in. for 5-8 in. bolt, 3 ins. by 3 ins. by 1-4 in. for 3-4 in. bolt, 3 ins. by 3 ins. by 5-16 in. for 1 in. bolt.
Guy plate	For 1-inch angle thimble eye-bolt when guy wire is subject to strains exceeding 8,000 lbs.	7 in. by 2 1-2 ins. by 5-16 in. flat steel used with 2 1-2 in. lag screws.

Tool	Use
Cable car (trolley type).	Riding messenger strand.
Block and tackle; six inch, double or triple sheaves, with 150 feet of 5/8 in. manila rope; six inch, triple with 250 feet of 3/4 inch manila rope.	Pulling up strand and down guys.
Strand cutters.	Cutting strand.
Strand dynamometer.	Measuring tension of strand.
Cable guide (double roller type).	Guiding and protecting cable from contact with bottom of first ring when pulling in.
Cable grips (size 1/2 in. by 24 in. long up to 3 in. by 24 ins. or 36 ins. long with single eye).	Attaching pulling in wire to cable.
Cable booster hook.	Relieving load on rings when pulling long spans.
Cable reel jacks (screw or lift types).	Jacking up cable reel to support it when pulling in cable. (May be used for supporting strand reel in paying out strand).
Cable guide and straightener (feeder type).	Performs same function as roller type but has a straightening device.
Cable bender.	Bending heavy cable.
Strand bender.	Bending guy or messenger strand for splicing with boltless connector.
Snatch blocks.	Guying ropes used in pulling in cable or in tightening strand.

Tools Needed for Aerial Cable Construction

CABLE construction requires a number of special tools, particularly where the larger sized cables are being placed.

A list of the most necessary tools is given above.

Suspension Strand and Cable Rings

SUSPENSION strand is available in three commonly used sizes, namely: 6,000, 10,000 and 16,000 lb. strand. Table No. 1 shows the type of strand to use for various size cable.

In locations subject to considerable coal smoke, as for example at important railroad crossings or near industrial plants, etc., it may be desirable to use Copperweld suspension strand in order to prevent excessive corrosion and subsequent expensive replacement.

Several basic types of cable rings are available. A cable ring which will not readily shift on the messenger is desirable. The size ring required will depend on the diameter of the cable to be supported. The following table shows the size ring for cables of various sizes.

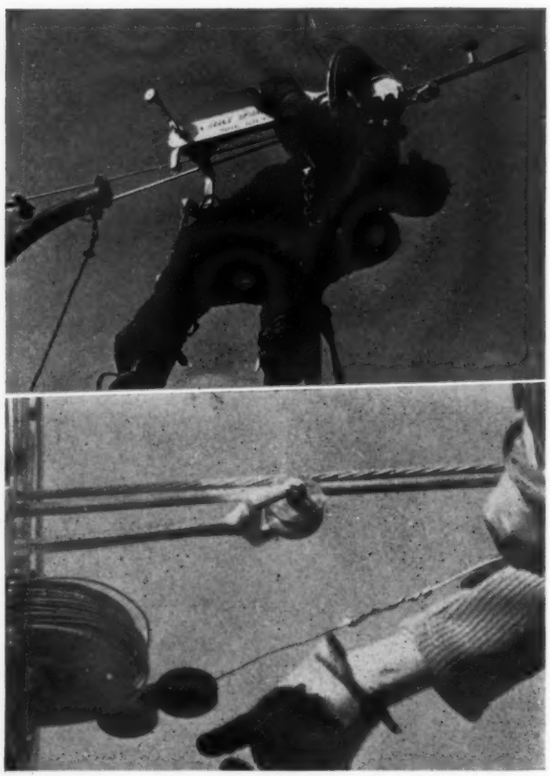

Fig. 2.—Operating Cable Spinner.

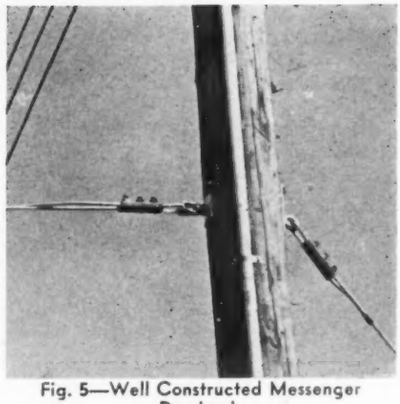

Fig. 5—Well Constructed Messenger Deadend.

Where cable is suspended by the Spinner method, a soft galvanized wire having a diameter of .091 inches and available in 300 ft. coils will be required. This wire should be of a type having a tensile strength of from 375 to 450 lbs.

Suspension strand should be attached to poles at a sufficient height to give adequate ground clearance and not less than 10 inches from the top of the pole. The strand should be supported on the pole by means of 3 bolt suspension clamps and 5/8ths inch through bolts.

Where a pole line may ultimately carry two cables and the poles will not carry power circuits, it may be desirable to use double arming bolts initially so that when a cable is added it can be carried on the opposite side of the pole

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HAWAIIAN COMMUNICATIONS

By RICHARD V. HALLER,
Public Relations Director
Mutual Telephone Company

Six Months After Pearl Harbor

ONE OF the inescapable communications problems that confronted military authorities in Hawaii at the outbreak of war was that the telephone system not only was but had to be military, naval and civilian all in one. There could be no such thing as a system for the Army, another for the Navy and still another for the use of the civilian population.

There are more than 20 separate Army and Navy posts on the island of Oahu. Each has its own telephone system and most of them are linked together by trunk lines, leased from the public telephone system, and all are connected with public telephone systems so that communication is facilitated to maximum efficiency for all purposes.

It is possible for a person at home in Honolulu to telephone a battery commander at a remote mountain artillery post, if he knows the ropes, although very few do know them and the practice is not encouraged.

Primarily, however, the purpose of having the system inter-communicating between civilian and service is for the convenience of the services. They have vast volumes of business to transact in the city, not only with the numerous offices they must maintain in the city but with business houses as well.

The sudden outbreak of war on December 7 found the Army and Navy in Hawaii not too well equipped with their own telephone systems. The major posts had been enlarged and new posts created in the course of the defense program which had been under way nearly two years when war struck. Even before that, commanding officers of some of the posts had been trying to obtain appropriations for new systems, but had been successful only in part or not at all.

The urgency with which additional telephone service was needed was demonstrated by the timing of the first requests. Official time of the attack on Pearl Harbor is set at 7:55 A. M. W. I. Harrington, commercial manager of Mutual Telephone Company in Honolulu received the first hurried order for additional circuits at 7:55 A. M. For a solid week from that moment the installation department of Mutual worked at nothing else but special orders.

Mutual's preparations for possible emergency began almost as soon as the defense program started, mostly from foresight but also because expansion problems began to arise. In those two years the number of telephones throughout the islands increased by over 25 percent, and today stands in excess of 45,000. The rate of call per telephone increased by nearly 12%. This was partly due to the vast acceleration of business activity and partly to crowded housing conditions under which there were more people per telephone.

Under such rapid expansion the system of exchanges, cables, trunks, selectors and other equipment must grow faster than the number of telephones, and the capital investment per telephone rises steadily. Consequently, as the defense program increased in pace, Mutual Telephone Company had to expand even more rapidly.

Farsightedness of Mr. Scott

DURING this period farsightedness of Alvah A. Scott, president of Mutual, saved the services from many serious inconveniences when war broke upon the islands. He reasoned that if war should come there would be great need of telephone materials and sup-

On June 7 the United States had been at war six months. The Mutual Telephone Company of Hawaii is the portion of the nation's telephone system operating in the test tube of martial law and military conditions. Through the courtesy of President Alvah A. Scott and Public Relations Director Richard V. Haller, of the Mutual Company, we are pleased to be able to give you a graphic description of the part that company is playing under war conditions. It is timely, having been dispatched from Honolulu on June 1 via Air Mail.

plies, and if it did not come the reserves on hand would be absorbed by normal growth and obsolescence. In but little more than one year the company increased its inventory of reserve equipment from about $475,000 to $1,-115,000.

When the Army and Navy swept down upon the company to borrow, buy and rent material for their own systems, and to order new service, Mutual had nearly everything that was needed. In many instances delays while such goods were being shipped from the mainland would have been highly inconvenient.

Activity Moved at High Speed

IMMEDIATE communications problems arising at the outbreak of war are too numerous to describe in detail. Pearl Harbor seethed. All existing projects leaped ahead at high speed and dozens of new projects were launched overnight, requiring literally hundreds of new offices, all of which had to be equipped with fast telephone service.

Army activity was just as great and spread over a wider area. The Engineers' Corps moved in a hundred directions at once. A large private school with an expansive campus was taken over for engineers' headquarters, while a dozen or more sub-offices were opened in various parts of the islands. Literally truckloads of switchboards had to be installed. New air fields were started in remote corners of the island, the Honolulu harbor had to be regimented and organized for war shipping, supply depots sprouted in every direction. Everything was done at high speed and the telephone was the key to speed.

Martial law was declared on the afternoon of December 7, and the military governor's executive officer moved into Iolani palace with a large staff. It was his job to revise the entire civilian government and make the military government work immediately. Every new office, new officer and new desk meant a new telephone.

Importance of telephone communication was emphasized almost as soon as martial law got under way by an order from the executive officer of the military governor. This was General Order No. 13, dated December 9, 1941. It read:

"By virtue of the authority vested in me as military governor, Territory of Hawaii, all of the activities of the Mutual Telephone Company, except so far as they relate to the Transpacific radiotelephone, are hereby placed under the control of Col. Carrol A. Powell (Department Signal Officer) for the purpose of making the maximum use of the facilities available in the emergency which now exists in the Territory of Hawaii. Colonel Powell will also supervise the use and disposition of all stocks of supplies now in the posession of the Mutual Telephone Company and will also exercise the same duty with respect to any additional stock received by this firm. By order of the military governor."

Complete Cooperation

THIS HAS proved to be one of the wisest arrangements of any relationship between civilian and military control. It provides for complete cooperation and for practically no interference with operations. The efficient and highly-trained personnel of the telephone company has been kept on the job. No strange Army officer has attempted to administer the company's activities or sit in a company chair, and the armed services have received everything they have needed if it was available within the islands.

Needless to say, traffic mounted to unprecedented levels during the first days of the war. Volume of business to be transacted was enormous and trunks and exchanges were loaded to capacity. At times they were even overloaded. One of the first measures taken was to urge the public to make all calls as brief as possible in order to help keep the lines clear. It was also impressed upon telephone subscribers that it would be helpful if they used their telephone as sparingly as was convenient.

On the morning of December 7 it was necessary to broadcast by radio that people should stay off the telephone. Naturally everyone wanted to find out things or tell someone something and nearly everyone was using the telephone until the traffic grew so heavy it interfered with the urgent business afoot. Traffic dropped over 30% after a few such announcements had been made, indicating the readiness of the public to cooperate.

One of the first steps necessary at outbreak of war was to put a system of censorship into operation over both the radiotelephone and wireless services. While radiotelephone transmission is always scrambled to protect the privacy of the regular users, the possibility that any well-equipped espionage system would have the necessary unscrambling apparatus and could copy every word spoken over the circuits had to be considered. Radiograms could likewise be copied by the enemy.

Aid In Censorship

DESPITE THE rush, the congestion and confusion, censorship was established over the radiotelephone in Hawaii without ever halting service. The telephone company assigned switchboard men to connect plug-ins and earphones, and the Army and Navy handed to those who wanted to telephone copies of instructions and restrictions that had wisely been worked out in advance. Although the traffic was slowed somewhat, the circuits were never idle or shut down. Each person was examined on the purpose of his or her call, told what he or she could or could not say, and then a censor listened in on the conversation. In a few days as the system was perfected and those operating it learned their jobs, the speed of calls was noticeably accelerated and has been working satisfactorily ever since.

It was about 11 a.m. on December 7 when Navy guards took post in all the radio communications offices in Honolulu and at the Transpacific board in the Mutual Telephone Company building. The Army established censorship over the inter-island radiotelephone

(Please turn to page 41)

Retiring president, William F. Lawton, Viroqua presided at the recent Wisconsin convention. At his left, recording secretary, J. E. Byrne, smiles approval.

National and State Association NEWS

THE Pennsylvania Independent Telephone Association held its regular annual convention May 21 and 22 at the Hotel Sterling in Wilkes-Barre. More than 200 members of the group attended the valuable meetings and participated in the discussions relative to maintaining efficient telephone communication, so necessary to the war program.

The election of Harry R. Miller, Myerstown, as president; J. F. Stockwell, Philadelphia, vice president; A. O. Black, Butler, vice president; H. M. Stewart, Harrisburg, executive secretary; M. E. Cunningham, Harrisburg, secretary; and G. B. Rudy, York, as treasurer, was announced early this year in TELEPHONE ENGINEER following their selection in January.

The guests were welcomed at the opening session by host R. W. Kintzer, vice president of the Commonwealth Telephone Co. President Miller then presented an account of the Association's year, including many worthwhile activities undertaken during that time.

Mr. Louis Pitcher, Chicago, USITA's executive vice president, outlined the problems confronting the telephone industry in his address entitled "The Industry from a National Standpoint."

Lt. Col. Wm. C. Henry, USITA's vice president, representing the United States Signal Corps, described the services that the Army expects from the Industry in behalf of the nation's war effort. He discussed the formation of Signal Corps units made up of Independent telephone men, and the sponsoring of them by state association and operating companies, as well as pointing out that Maj. Gen. Dawson Olmstead, chief signal officer of the Army, had commended the telephone industry for its fine cooperation.

An inspirational address entitled "Utilities Pledge Allegiance" was delivered by John H. Murdoch, Jr., president, Pennsylvania Water Works Association.

The benefits of the war to the industry were enumerated before the association by Wilfred D. Gillen, Harrisburg, vice president of the Bell Telephone Co. of Pennsylvania. Many improvements have been developed, he stated, which will be in common usage after the war.

The various plant department conferences were held in the afternoon of the second day. The traffic conference, headed by James H. Earley, Harrisburg, was treated to an interesting demonstration of the mirrorphone. Mr. Earley was assisted by Miss Elizabeth Bunny, Forty Fort, and G. E. Slusher, Erie.

The entertainment of the group at the annual banquet on the evening of the second day—consisting of group singing, led by "Danny" J. Morgan of the Hazard Insulated Wire Works, Wilkes-Barre, and the Shawnee Choral Society of Plymouth—was presented with the compliments of the American Automatic Electric Sales Co., Kellogg Switchboard & Supply Co., North Electric Mfg. Co. and Stromberg-Carlson Telephone Mfg. Co.

Edwin M. Blakeslee, vice president of the Commonwealth Telephone Co., was elected president of the Wisconsin State Telephone Association.

The Wisconsin Convention

A VERY worthwhile annual convention was served to members of the Wisconsin State Telephone Association at Milwaukee, June 3 and 4. About 150 telephone men and women heard speakers on many subjects, with a keynote on war conditions and their effects on the industry. A Round Table on the recent WPB Orders was an im-

(Left) Walter Dakin presides over the Open Forum with his Board of Experts during Wisconsin convention. (Center) The registration desk at a busy moment. (Right) A comely representative of Wisconsin Tel. Co. and her boss (center) demonstrated the Mirrophone to Wisconsin Conventionites.

portant feature.

Edwin M. Blakeslee, Madison, vice president of the Commonwealth Telephone Co., was elected president, succeeding William F. Lawton, Viroqua. J. J. Kuehn, Rhinelander, was elected vice president and Alton H. Bowden, Almond, secretary, J. E. Byrne, Madison, recording secretary, and Charles A. Blair, treasurer, were re-elected.

S. B. Lockwood, Mondovi, E. E. Ringrose, Black River Falls, and Messrs. Blair, Bowden and Lawton were re-elected to the board of directors for a 3-year period. Other directors are: F. M. McEniry, Milwaukee; F. H. Runkel, Madison; E. B. Samp, LaCrosse; H. Teasdale, Sparta; Mr. Blakeslee and Mr. Kuehn.

Immediately after Fred H. Runkel responded to a welcome to the association Mr. Lawton gave his address to the convention in which he outlined the association year and the activities of the officers and members. The reports of Mr. Blair, Mr. Bowden and Mr. Byrne followed. These reports were quite flattering and were accepted by unanimous vote.

The Round Table discussion of Conservation and Priorities was in charge of Walter Dakin, general plant superintendent, Central Group of Operating Companies of the General Telephone Co., Madison. A series of questions and answers were discussed in this Open Forum with Mr. Dakin being assisted by a "board" of experts. The Round Table resulted in many questions being answered about the L-50 Amended Conservation Order and the new Priority Orders P-129 and P-130.

Heard on the afternoon program were F. M. McEniry who introduced the convention to two movies prepared and shown by the Bell company. Louis Pitcher, USITA executive vice president, gave his report on National Affairs in which he gave all last minute news of interest to the industry. Ralph Ammon, of the Wisconsin Dep't. of Agriculture, gave the final talk of the first day's program.

The second morning session heard R. M. Reiser discuss "Exchange Area Boundaries".

Mr. Blakeslee was the next speaker and called his paper "Report-O-Mania."

An address by Reuben W. Peterson, of the Wisconsin commission, and a talk on Civilian Defense by R. S. Kingsley, completed that portion of the program. A directors' meeting was held immediately afterward.

Dr. J. O. Perrine, assistant vice president, American Tel. & Tel. Co., started off the final general session with his address on "The Artificial Creation of Speech" during which the Voder was demonstrated. Lt. Col. Wm. C. Henry, Signal Corps, represented the Chief Signal Officer, General Olmstead, at the meeting and gave particulars to Wisconsin telephone men of the part they are and can play in our war efforts. Frank L. Greenya closed the general session on his address "Americanism". The annual banquet and entertainment was held the evening of June 4.

On the second day the Traffic Conference met in private session under the direction of L. F. Shepherd, traffic superintendent, Commonwealth Telephone Company. A First Aid demonstration by employees of the Wisconsin Telephone Company was of particular interest due to the widespread study First Aid is now getting by all Civilian Defense workers.

The feature speaker at the Traffic Conference was Miss Cecilia M. Burke, supervisor of operating methods, Commonwealth Telephone Co., Madison. Her address "The Traffic Department Goes to War" was timely and well prepared. Showing of the two movies "Ready on the Home Front" and "Safeguarding Military Information" which was shown earlier in General Sessions completed the Traffic program.

Inventory Restrictions in P-129 And P-130 Postponed Till Sept. 1

The effectiveness of the 27½ per cent restriction on inventories for the telephone industry in the Preference Rating Orders P-129 for maintenance and repair and P-130 for operating construction supplies was postponed until September 1 by the War Production Board June 3 so as to permit the companies to adjust their inventories, swollen as a result of increasing demands for service by war agencies, especially the armed forces.

The postponement until Sept. 1 was promulgated through Amendment No. 1 to the two orders, P-129 and P-130, and thus deferred the requirement of a report by the telephone companies on their inventories as of June 1. The P-129 and P-130, orders which went into effect on April 23 contained a stipulation that the A-3 preference rating could not be used for materials to go into maintenance and repair equipment and parts or for normal operating supplies unless the inventories of the telephone companies was held to a practical working minimum, which was fixed at 27½ per cent of the dollar value of material used for all purposes during 1940.

The War Production Board through its Division of Industry Operations and Communications Branch which formulated and approved the amendment for the Sept. 1 effective date postponement emphasized that adjustments of inventories must be made by the telephone companies because the demands of war agencies, especially the armed services, has placed the telephone industry in the position of "having inventories long on some items and short on others."

The Amendment No. 1 to each of the orders (P-129 and P-130) will give the telephone companies an opportunity to balance inventories, the War Production Board stated, **"an opportunity to balance inventories without indiscriminate junking of excess stocks."**

To show the justification for the postponement, the WPB stated that the **immediate application of the inventory restrictions upon the telephone industry would cause hardship and would accomplish nothing toward furthering the war program, since the materials on hand can be used only for the telephone operations for which they were produced."**

The text of the amendments to the two orders which revised the same subparagraph in each order read as follows:

Paragraph (g) (1) is hereby amended by inserting before the first word of that paragraph ("Except") the following words:

"On and after September 1, 1942."

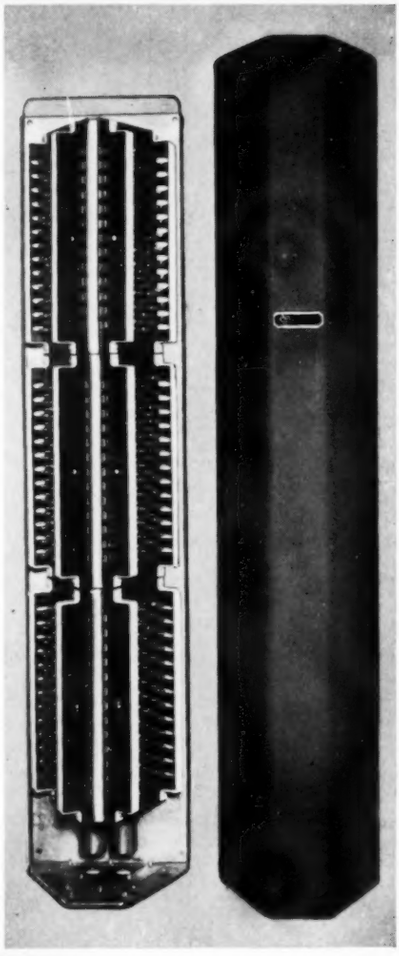
California Association to Hear Dr. Emil Ludwig

According to F. V. Rhodes, secretary of the California Independent Telephone Association, all plans are completed for the California convention which will be held June 18 and 19 at Santa Monica. Feature out-of-the-industry speaker will be the famous Dr. Emil Ludwig, author of several best sellers.

George Blake, secretary and treasurer of the California chapter of the Independent Pioneer Telephone Association, has written us asking for a dozen or so copies of TELEPHONE ENGINEER to be displayed, and outlined some very interesting plans for the banquet that will be sponsored by the Pioneers during the convention.

I WAS WHIPPED on space 'till Uniflex in the new Terminal Vault came along!..

"NOW I've really got the space problem licked. Think of it . . . . all of the economy, all of the working accessibility of the new Uniflex Cable Terminal in one-third the space and at one-half the cost of old style terminals, binding post chambers and pot heads in the new Terminal Vault! This new terminal vault is really the finest time and space saver that the telephone industry has ever been offered. No warping doors, or latches and hinges to get in the way or protrude. Cover section is completely removable. No complicated design details to limit working space or to increase installation difficulties!" Write today for further details or buy the new Terminal Vault for Uniflex from telephone manufacturers or supply houses.



Here is the new Terminal Vault for Uniflex that requires only one-third the space and costs less than half of ordinary old style terminal cabinets of the same capacity. Provides 100% working accessibility to the Uniflex units which it houses. Dust Proof cover section completely removable. Wall mounting back section has no projecting sides. Streamlined in appearance. Durably finished one piece welded cover section. Concealed lock. Insulating individual drop knockouts. Close fitting, dust-proof cable entrances.

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★ ★ ★ **SPACE CHART** ★ ★ ★

Type	Cable Capacity	Space Required	
		For cabinet	Per Pair
Ordinary Single Face Plate Terminal	156 pairs	5.42 cu. ft.	.04 cu. ft.
Uniflex in Locker Type Cabinet	156 pairs	4.32 cu. ft.	.03 cu. ft.
Uniflex in Terminal Vault	156 pairs	1.35 cu. ft.	.009 cu. ft.

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COPPERWELD

TELEPHONE companies are getting more miles of line with less copper by using Copperweld. And not only are they saving copper but they are getting all the Copperweld advantages of high strength, good conductivity, rust-resisting life and easy handling. Copperweld wire is guaranteed to have the rust-resisting life of solid copper. Copperweld wire stays new — its better voice transmission and greater safety are permanent characteristics.

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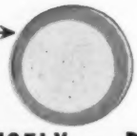

USE COPPER WISELY · DO NOT WASTE

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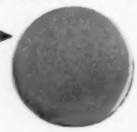

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FOR THE TOUGH ASSIGNMENTS

Thanks to the special quality of its conductors, insulation, braid and finish Monotype Drop Wire resists the cruelest attacks of wind, rain, sun or sleet. Monotype has what it takes—in abundance—for this great wire has survived the most extreme service conditions and even greater tortures in the test laboratory. Monotype's durability is particularly important these days when shortages of material and manpower restrict replacements.

MONOTYPE DROP WIRE

MANUFACTURED FOR

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the Navy "E"—official recognition of excellence of p rforme
in the production of war-time equipment for the U ed S
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We are proud of this as an honor shared equa by e
member of our entire organization. They, by their am w
determination, and unstinting zeal, made possible e gre
expanded output of communication products so urge y nee
—while maintaining the quality and performance the

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For Outstanding Service in Wartime Production ★ ★ ★ ★

levels set by Navy requirements.

We feel, too, and want our loyal customers to know that it is a tribute to them as well. Their understanding and forbearance in the difficult problems of meeting their needs during these times have helped us to meet our steadily expanding Navy commitments.

This heartening recognition of our effort thus far will encourage us to continue, and to resolve not to relax for an instant until the final and inevitable victory is won.

AUTOMATIC ELECTRIC

DEVELOPERS OF THE LONGER STEP-BY-STEP MACHINE SWITCHING AUTOMATIC DIAL SYSTEMS

TELEPHONE SIGNALING AND COMMUNICATION APPARATUS
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AUTOMATIC ELECTRIC SALES COMPANY, Chicago, U. S. A.
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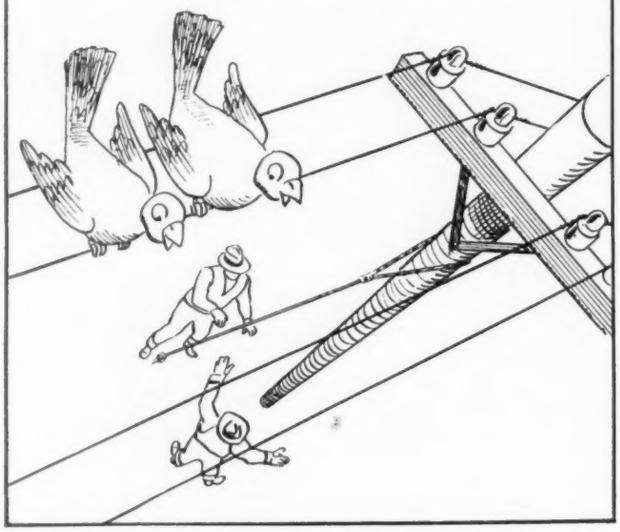
"WHAT DO THOSE FELLOWS EXPECT—A TORNADO?"



THEY certainly do—in the telephone and telegraph business, you have to expect almost anything and be ready for it. Messages must keep going through when the weather is tough. And never was it more important than right now to keep the messages flowing through the wires without interruption.

That's why so many communication engineers recommend AMERTEL Telephone Wires and AMERSTRAND Steel Strand. They have the strength to withstand severe weather conditions. They are made with accurate production control—right from the ore to finished product. And that gives you wires of "Controlled Quality." AMERTEL and AMERSTRAND are protected with a corrosion-resistant coating that is applied by the "hot dip" process. This forms a chemical bonding of the zinc and the steel. The complete, controlled union of the two metals prevents flaking of the galvanizing.

AMERTEL wires are available in high-tensile grades — 85 and 135 — as well as in the regular grades "EBB", "BB" and "Steel". AMERSTRAND is made in all standard sizes and grades.

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Amertel TELEPHONE AND TELEGRAPH WIRE — AMERICAN STEEL & WIRE COMPANY

Amerstrand STEEL STRAND MADE BY AMERICAN STEEL & WIRE COMPANY

LOOK FOR THESE TAGS.

They are placed for your protection on every coil of AMERTEL Telephone and Telegraph Wire and AMERSTRAND Steel Strand.

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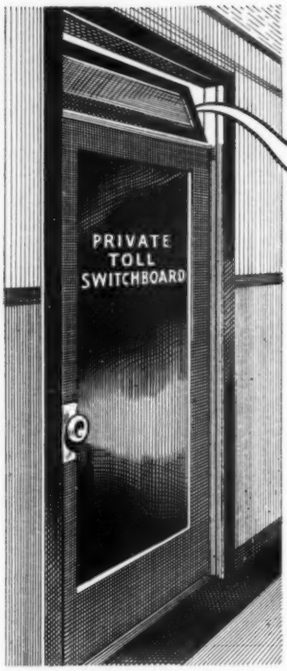

NUM-BER PLE-E-ASE

Pull the lever when a toll call starts, and again when finished. Then look at the toll ticket and you'll find clearly printed the starting and finishing time and, what's more important, the time taken for the call—all figured out without any effort of the operator. And you can bank on the accuracy of the elapsed time shown, for the Calculagraph can't make mistakes.

Thus this inexpensive machine saves busy operators the work and time of figuring and provides an indisputable, permanent record of every toll call.

Made in three different models operated by electricity or spring-drive, the Calculagraph is suitable for every condition.

Model No. 33

During the half century that Calculagraphs have been on the market they have been adopted by hundreds of telephone companies the world over. Why not you?

Write for particulars.

CALCULAGRAPH CO.

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CALCULAGRAPH

Accurate Toll Timing to the Second!

25 YEARS AGO THIS MONTH

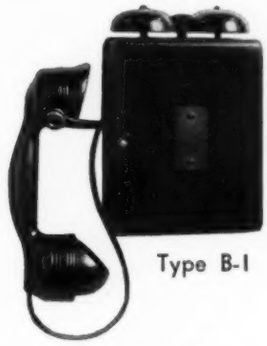
Taken from TELEPHONE ENGINEER files of June, 1917

THE June, 1917 issue of TELEPHONE ENGINEER carried the President's Executive Order of Censorship which had been passed by Congress on April 6, 1917 and which was dated April 28, 1917. (The Order of Censorship covering World War II went into effect in April, 1942).

The Southern States Independent Telephone Association convention which had been held in Louisville, Ky., during the last part of May, 1917, was reported in the June, 1917 issue of TELEPHONE ENGINEER. The chief topic for discussion was the relation of the telephone companies to the government in the present crisis. W. S. Vivian of Chicago, who addressed the association in the absence of F. B. MacKinnon of Washington, said, "The government today needs 100 men where one year ago it needed but one, and the part telephony will play in the national crisis is no small one. We have under way two telegraph and eight field battallion companies, consisting of thirteen commissioned officers and seventy-two men, each a specialist in his branch of the work. These are wire, radio and outpost companies."

According to the June, 1917 issue of TELEPHONE ENGINEER the Chicago department of the Western Union Company volunteered to instruct men and women operators for the army. The service was thought to be enticing to young men who had not reached the military age since operators for field work would be called within a short time.

The army training camp in the San Francisco district had too much telephone activity as reported by the June, 1917 issue of TELEPHONE ENGINEER. We quote: "This matter of incoming telephone calls for the 2,500 members at the training camp is something of a problem, and their wives, sweethearts and business partners or acquaintances will have to understand that they cannot be telephoned to at all hours," said Major L. C. Brown, U. S. A., who was chief of staff for the post commandant. The Major went on to explain that the Presidio training camp was not a hotel and that there would not be enough orderlies on hand to "page" 2,500 men scattered hither and yon.



Above are typical examples of AR rebuilt telephones. Your old instruments can be rebuilt to similar standards of excellence.

REBUILD YOUR EQUIPMENT—

BEFORE IT "FALLS TO PIECES!"

Don't wait until your equipment becomes unusable before having it rebuilt the "AR" way! Make AR rebuilding a regular part of your long-term maintenance plan for every piece of equipment you have—and you'll be surprised at the step-up in operating efficiency which will result. AR costs are low, too, and you'll find that the eventual working life of apparatus of all kinds will be greatly lengthened by rebuilding before it gets too badly worn. . . . Write for prices and full information about AR Rebuilding Service.

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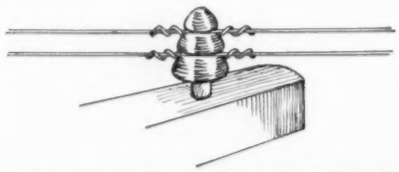
Conducted by B. C. BURDEN, Technical Editor

Line AND Desk

Q. Is it necessary to use a drop bracket for transposing unimportant rural lines?

A. No it is not. Minor lines can be transposed by the use of a 9" pin and a two piece glass. The wire is tied on the glass as shown below.



Q. What effect will a shorted load coil have on transmission over a loaded cable?

A. A missing load coil will result in an *impedance irregularity* that will adversely affect transmission particularly on repeatered circuits. Defective load coils are located by measuring the impedance components of the loaded cable over a wide range of frequencies. Any impedance irregularity results in a "reflected wave" which at certain frequencies makes the measured resistance and reactance components appear much higher than normal. By the use of an equation which takes into account the velocity of wave travel and the frequency interval as shown by the reflected waves the distance to the defective coil can be determined.

Q. Does a two wire multi-grounded power line cause more inductive interference than a two wire line from a delta system?

A. This will depend upon the type of connection employed on the delta system. If the two wire line is directly connected to a three phase line it will tend to unbalance the line and if the single phase line is long may set up severe interference to paralleling power lines. If the two wire power line is connected to a three phase delta system through an isolating transformer, the two wire single phase line from the delta system is definitely better than the two wire multi-grounded system from an inductive standpoint.

Q. Why does quadded #19 gauge cable have lower transmission loss than paired #19 gauge cable?

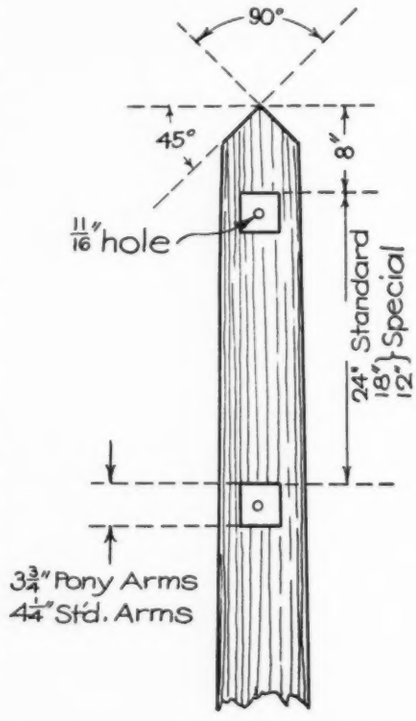
A. The usual type of paired 19 gauge cable has a much tighter core than quadded cable, hence, a higher mutual capacity and consequent transmission loss.

Q. What length cables should be used for the termination of cables entering a central office?

A. Tip cables should have a minimum length of 8 feet and should preferably be 10 to 12 feet in length.

Q. Please give the standard framing dimensions.

A. The following figure illustrates the standard framing dimensions. The width of gain will depend upon whether or not a pony or standard arm is used. Normally 24" spacing should be used between crossarms except where a reduced clearance is necessary in order to get greater road clearance or for some other reason.



Q. What class poles are considered suitable for 2 wire rural lines?

A. In most localities a class #10 pole is satisfactory for two wire rural lines.

Q. Is the "thimble eye bolt method" of dead ending guys considered an approved method?

A. Yes, this method which has decided advantages over the "wrapped" method is now widely used.

Q. How should cable terminal numbers be shown on terminal poles?

A. Either by the use of metal numbers or by stenciling black numbers on a white background directly on the pole.

Q. Should guy stubs be raked?

A. Yes, guy stubs should be given at least one foot rake as this increases their holding power.

Q. Is loading practical for exchange cable as a means of reducing the transmission loss?

A. Loading is effective when the cable run is long enough to permit the insertion of three or more load coils.

Q. Can more than one cable be suspended on a messenger by the "spinner method?"

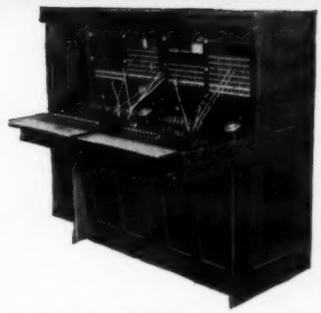
A. Two cables can be placed at the same time and with a single spinner wire.

Q. What precautions should be taken at the pole to avoid possible damage to the cable sheath where suspended by the spinner method.

A. Some companies wrap the cable directly under the suspension clamp with a lead strip and then "snug" the cable tightly against the suspension clamp. A preferable method now used by the Bell system consists in using small metal clips to fasten the spinner wire tightly against the messenger on each side of the suspension clamp. The spinner wire is carried over the top of the suspension clamp.

Stromberg-Carlson Super-Service Switchboards

—offering 22 practical, outstanding features which promote fast and accurate service in central energy exchanges from a few hundred to many thousands of lines.



Stromberg-Carlson Junior Multiple Switchboards

—moderate in cost, low in operating expense. These boards provide large-city service for the exchange of 800 lines or less.

Proper Maintenance of Telephone Switchboards Is Now a PATRIOTIC DUTY

In these times of stress, telephone communication assumes a role even more important than ever before. Our Government's General Conservation Order No. L-50 urges you to get the utmost from your present equipment.

Your Stromberg-Carlson switchboard is designed to render long and satisfactory service, if you give it proper maintenance. Check *now* as to what you may need for maintenance work during the months to come — then place your order for such necessary materials as are permitted by priorities. Keep service interruptions to a minimum.

Let's All do our part to "Keep 'em Talking"!

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MAKERS OF VOICE TRANSMISSION AND VOICE RECEPTION APPARATUS FOR FORTY-EIGHT YEARS

Personals from the Field

Major John Carson Grable received his promotion as Lieutenant Colonel, Signal Corps, in the Regular Army following confirmation of his designation by the Senate March 16. Other Signal Corps majors to be promoted to Lieutenant Colonelcies in the Regular Army were **Percival A. Wakeman, Floyd T. Gillespie,** and **Howard S. Paddock. Lt. Col. Grable** is well known to the telephone industry because of his lengthy experience with the OCSO Plant and Traffic Division.

●

Harvey Juve, formerly of Rapid City, S. D., replaces F. H. Schirmer as wire chief of the Cedar County Farmers Telephone company.

●

John H. Tripp, 89, died at his home in Kibbie, Mich., early in March. He was a pioneer member of the Kibbie Telephone company, which he helped to incorporate in 1894, and with which he was connected until his retirement in 1914.

●

Dr. Charles Ignatius Anders, 72, secretary-treasurer of the Old Fort (Ohio) Telephone Company, died at his home in Old Fort recently. He was well known in both the telephone and medical fraternity.

●

Calvin A. Moore, 70, for the past 23 years manager of the East Townsend (Ohio) Telephone Company died at his home in Hartland, Ohio, recently from a long illness.

●

Samuel G. Ordway, secretary-treasurer of the International Telephone & Telegraph Corp., and a director of I. T. & T. and eight other affiliated corporations, was found dead in a bathtub in his New York apartment May 31. An autopsy revealed drowning was the cause of death.

●

Lt. Col. Charles W. Wood, assistant executive officer at Fort Monmouth, died from a sudden heart attack June 1 in the War Department Munitions Building while in Washington on a special mission in the Office of the Chief Signal Officer. His funeral was held June 3 at the Fort Myer, Va., Chapel and burial took place in Arlington Cemetery. He was 56 years old.

TEXAS STATE POLICE

DEPARTMENT OF PUBLIC SAFETY

CERTIFICATE OF MERIT

TO

OSCAR BURTON

For operating a motor vehicle in such a manner as to reflect definite skill, courtesy, and a knowledge of safe driving practices when observed by an officer of the Texas Highway Patrol.

Homer Garrison, Jr., Director

Oscar Burton, vice pres. and general manager of the Gulf States Tel. Co., Tyler, Texas, was awarded the certificate of merit shown above for careful driving. Oscar estimates his mileage the past 23 years would be 500,000 miles. During this time he has never had a wreck or violated a traffic law—or at least he will not admit it.

●

William Lyons, manager of the Canton (Mo.) exchange of the Western Light and Tel. Co., has a "believe-it-or-not." Lightning struck twice within the week, disrupting telephone service both times.

●

Carl Mess, president of the Price County Tel. Co., Phillips, Wisc., suffered a slight stroke recently while on a business trip to Milwaukee. His activity will be on a limited basis in the future although satisfactory progress is reported on his recovery.

●

Endsley Jones, division superintendent of the Western Light and Tel. Co. at Kingfisher, Okla., has announced that a complete new switchboard unit has been installed and is now in operation. You can imagine the somersaults he had to turn and the strings he had to pull to get it.

●

R. W. (Rube) Kintzer, vice president of the Commonwealth Tel. Co. at Wilkes-Barre, Pa., not only served as host for his company for the Pennsylvania Assn. this year but "doubled in brass" by serving as toast master during the social hour.

William McVay, of the LaPlata (Mo.) Telephone Company, is convalescing from an accident when he fell from a telephone pole where he was working a short time ago.

●

Mr. Ben Ranch, commercial supervisor of the Commonwealth Telephone Co., Wausau, Wis., addressed the Kiwanis Club at Wausau recently concerning the problems confronting the telephone companies.

●

The new Chief of Communications of the Coast Guard, former FCC Assistant Chief Engineer **E. M. Webster,** received the rank of Captain when he assumed that post June 1. **Captain Webster** was promoted to that rank when he returned to active service. When he was retired in 1934, he held the rank of Lieutenant Commander in the Coast Guard.

●

Dr. Robert Runnels Williams, Chemical Director of the Bell Telephone Laboratories, who discovered Vitamin B-1 for foods and flour, was given an honorary Doctor of Science degree by Columbia University June 2 at its 188th annual commencement.

●

Roy C. Corderman, American Telephone and Telegraph Co. commercial representative in Washington, who has been for the past six months with the Coordinator of Inter-American Affairs, June 1 was officially transferred to the office of Coordinator of Information Donovan as the Communications Engineer in the radio technical division.

●

The vital necessity of communications and Signal Corps activities in the war effort was emphasized by **Major General Dawson Olmstead,** Chief Signal Officer of the Army, in an address at dedication ceremonies for the new Signal Corps Depot at Lexington, Ky., May 29.

●

The Home Telephone Company at Hannibal, Mo., is installing a new switchboard to take care of the increased subscribers. This telephone system is owned by **James Carter** of Perry, who also owns four other telephone systems in Missouri, at Perry, Whiteside, Eolia and Silex.

●

George Schnable, personnel official of the Western Electric Co., is now serving with the Army Signal Corps in a civilian capacity on a four months assignment under **Brigadier General Roger B. Colton,** Chief of the Supply Service in the Office of Chief Signal

Officer, **Major General Dawson Olmstead**. Mr. Schnable is to make a fundamental study of the inspection work of the Signal Corps.

●

Clarence E. White, assistant to the vice president and general manager of the Eastern Area of the Bell Telephone Co. of Pennsylvania, died June 2 at Philadelphia after a brief illness. He was 56.

●

I. F. Dix, retired vice president of the Pacific Telephone and Telegraph Co. for the Washington-Idaho area, has been named acting district priorities manager of the War Production Board in the Los Angeles area.

●

Harvey Fletcher, director of physics research of the Bell Telephone Laboratories and a noted inventor and authority, especially in the field of audition, was awarded the honorary degree of Doctor of Science by the Stevens Institute of Technology at its 70th annual commencement May 2.

●

C. B. Dwyer, who as general superintendent of the United Telephone Company, had charge of plant operations of the Ohio Telephone Service Company, Greenville, died recently at Warsaw after a lingering illness.

●

A. C. Stuart traffic manager of the Lima Telephone Co., retired recently after 27 years service. He was presented with a wrist watch by employees of the company and American roses from The Telephone Pioneer club.

●

W. H. Todd, formerly of Abilene, Kansas, has assumed his duties here as auditor of the Northern Ohio Telephone Co. at Bellvue. Todd replaces **C. C. Elias,** who recently accepted a commission as lieutenant in the Army. **Todd** has been connected with United Telephone Co., stationed at Abilene, for the past 14 years.

●

LeRoy Early, who recently came to Oberlin to succeed Eldon Burgess as inspector for the Northern Ohio Telephone Company, was seriously injured recently when he fell from a pole while installing a telephone. The first call put over the new phone was for an ambulance to rush Early to Allen Hospital.

●

Brigadier General "Jimmy" Doolittle, who brought cheers to us all on his recent exploits, remains his gracious self. Following the bombing of Japan and his subsequent return to the United States, General Doolittle, an

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Hubbard pole line hardware saves time for the lineman because of uniform dimensions, accurate threading and convenient design. Extra strength enables it to hold fast in the face of ice-loads, storms or other emergencies. The long-lasting galvanized finish reduces future maintenance.

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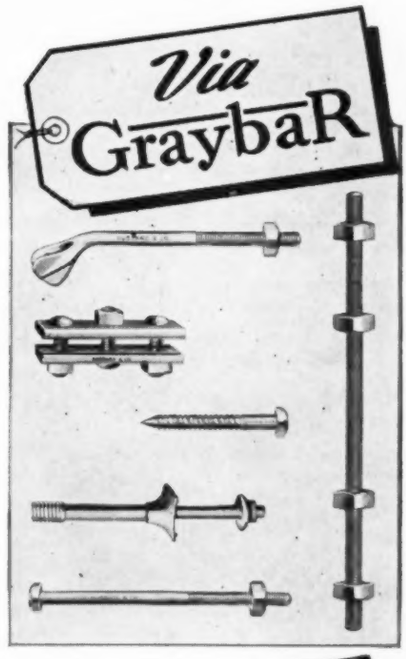

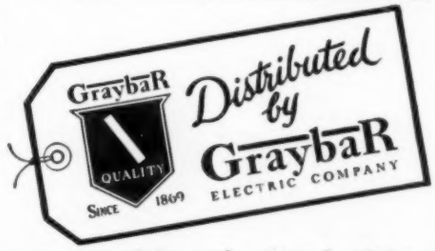

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with experience—about *Crapo* High-Tensile Line Wire! He'll tell you that it can be handled with the same ease and pulled in with the same facility and by the same methods, as any other telephone line wire.

"In fact," he will add, "you can build more line in a day with *Crapo* High-Tensile Line Wire than with the old wire." Spans, of course, can be much longer; distances between poles greater. That saves time and material; cuts construction costs.

And, when *Crapo* High-Tensile Line Wire is sagged according to carefully prepared tables,* you get a better line—one that will stand up longer, require less maintenance and make for improved service.

Be sure to investigate the outstanding advantages of these two high-strength line wires: *Crapo* HTL-85 for spans up to 225 feet in Heavy Loading Districts; *Crapo* HTL-135 for spans to 350 feet!

Ask your jobber's salesman or write for Bulletins No. 201 and No. 202 containing helpful data and construction practice information!

*Complete stringing sag data mailed on request.

Produced by the Manufacturers of *Crapo* Galvanized Steel Strand, Telephone and Telegraph Wire, Construction Wire, Tie Wire Ground Wire.

INDIANA STEEL & WIRE CO.
MUNCIE, INDIANA

old friend of the writer, immediately wired a number of telephone manufacturers in our industry whose materials aided his daring raid on Nippon.

●

J. H. Simpson is one of the incorporators of the Farmers Rural Tel. Co. at La Verne, Oklahoma.

●

E. G. Ankron is the new district manager of the Ohio Northern Tel. Co. with office at Norwalk, Ohio. He succeeds A. E. Lewellen, resigned, who has served as district manager since 1931.

●

Fred D. Barnes, 56, manager of the Lawton (Ia.) Tel. Co., died May 2, following a one year illness.

●

Stanley H. Manson, executive secretary of the joint labor-management committee of the Stromberg-Carlson Tel. Mfg. Co., reports the 100% participation of office and factory personnel in voluntary regular purchase of war bonds and stamps by pay roll deduction.

●

Garnett Peatross, whose name is familiar to those who saw the Peatrophone, has moved from his handsome residence in Sumter, South Carolina, to make way for a Cadet Club to be used by cadets training at Shaw Field nearby. A number of Sumter matrons have volunteered to serve as hostess one day each week.

●

David Shavitch, an Illinois telephone engineer who has been working in foreign countries for the past few years, has returned to the United States. His latest work was in and around Hawaii.

●

Lt. Col. Harley P. Browning, who has been Executive Officer of the Army Communications Branch under Brigadier General Frank E. Stoner, its chief, was assigned last week-end to be Signal Officer of the 8th Corps Area at San Antonio, Texas. Col. Browning, who served with the Southwestern Bell before he entered the Regular Army during the first World War, has been Signal Officer in the Panama Canal Zone for two years until his return to Washington for his assignment in the Army Communications Branch late last fall.

●

John A. Hartman, Jr., FCC attorney who handled telegraph matters, is now serving in the Army Air Force's Directorate of Communications as a First Lieutenant.

●

The **Platte Valley Telephone Corp.** has recently installed dial telephones in Guernsey, Wyo. The cut-over occurred the early part of May.

Annual Meeting Of I. T. & T. Held at Baltimore

At the Annual Meeting of the Stockholders of the International Telephone and Telegraph Corporation held in Baltimore, Md., May 27 all directors were re-elected as follows: Arthur M. Anderson, Sosthenes Behn, F. Wilder Bellamy, Daniel B. Borden, John W. Cutler, Charles E. Dunlap, James E. Fullam, John L. Merrill, Walter E. Ogilvie, Henry B. Orde, Samuel G. Ordway, Frank C. Page, Bradley W. Palmer, Henry M. Pease, Frank W. Phelan, George E. Pingree, Wolcott H. Pitkin, Lewis J. Proctor, William F. Repp, Kenneth E. Stockton and Mark A. Sunstrom. Arthur Andersen & Co. were appointed auditors for the ensuing year.

Southern Bell Buys State Phone System

Sale of the Christian-Todd Telephone Company of Hopkinsville, Ky. to the Southern Bell Telephone and Telegraph Company was approved by the State Public Service Commission today. There was no protest. The joint application filed by the two companies said the price would be $690,000 plus certain adjustments to be made.

The concern with headquarters in Hopkinsville operates in Christian and Todd Counties. The Southern Bell, which operates in nine Southern States, explained it had no exchanges in those two counties and wanted to add them to its network.

Rites for Mrs. Hogue

Mrs. Grace B. Hogue, wife of Hugh W. Hogue, Kellogg Switchboard and Supply Company district manager in Indianapolis, passed away on May 26. Funeral services were held in Indianapolis on May 28. Having accompanied her husband on many trips throughout his territory and to conventions during his twenty-five years with the Kellogg company, Mrs. Hogue was well known to telephone people. Her passing is greatly mourned.

Minnesota Company Purchases New Lines

The Normania (Minn.) Rural Telephone Company has been given permission to purchase from the Home Telephone Company, a corporation, all of the physical assets of properties known as Lines 5F, 6F, 8F, and 15F including poles, wires and instruments located in Yellow Medicine and Lyon counties, Minnesota.

Hawaiian Communications

(Continued from page 26)

system operated by Mutual at about the same time. This system has been perfected until it operates without a hitch.

The regulations and restrictions have been simplified and the public has been educated on what can be said. Employes of the communications companies are prepared to instruct patrons on what can and cannot be telephoned. A person desiring to call from Hawaii to the mainland must identify the person to be called and give a full account of the conversation to be held. If any names are to be mentioned, they must be given to the censors beforehand, and if any are mentioned that have not been submitted, the connection is broken immediately. Other phases of the conversations are dealt with similarly, and there are certain standard subjects that cannot be mentioned at all.

THE ARMY maintains practically the same system in operation over the inter-island radiotelephone system, but has to have a larger staff on duty because there are more circuits between the six islands served that there are between Honolulu and the mainland.

Censorship of radiograms and cablegrams is the biggest job in point of volume, but the control is easier to maintain because it can be exercised in advance of rather than simultaneously with transmission. The Navy has taken over a three-story downtown building for this function. Navy personnel stationed at the communications offices pass on the simpler messages, but anything in doubt is sent to the censorship building for approval.

During the first days of war when enormous numbers of messages of reassurance were being filed, radiograms were subject to serious delay, but as the system of censorship became organized and improved, delay has been cut to practically nothing except on messages that must be referred to higher-ups for decisions, and even then the time consumed is not great.

Needless to say war and the preparations for combat have greatly increased the volume of communications between Hawaii and the mainland. Five Transpacific circuits are in almost constant operation and the inter-island circuits are well loaded, too. Likewise the radiogram and cablegram business is booming because there is so much business where time is vitally important and because mail censorship and the capacity of clippers to carry mail render the time of delivery uncertain.

Minimum of Curtailment

THERE HAS been but a minimum of curtailment in local telephone service in Honolulu. Early in April the War Production Board in Washington ordered that installations of extension telephones in residences be discontinued and also forbade the exchange of old-style instruments for new handsets. The order further required that party-line service be used wherever it would effect any conservation of facilities.

But when it became impossible for the Mutual Telephone Company to obtain more equipment from the mainland, particularly that used in exchanges and the trunking system, the Signal Officer of the Hawaiian Department exercised the powers given him by the Military Governor and with the cooperation of the Telephone Company

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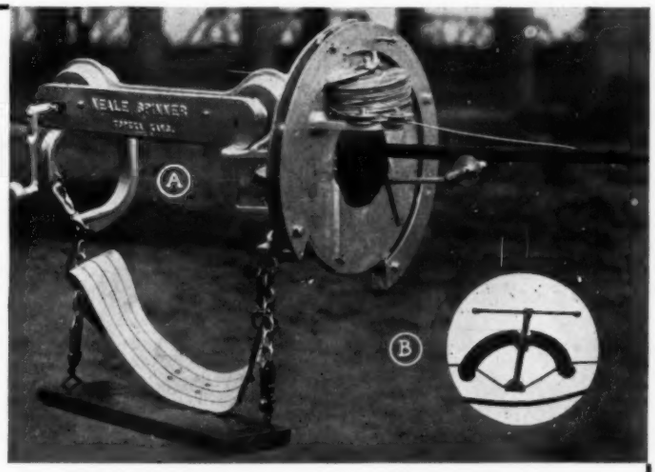
• SAVES VITAL MATERIALS •

ELIMINATES Ring Cutting, Bowing, Crystallization •

REASONABLY PRICED
Pays for itself in a Few Small Jobs •



A. Neale "Model B" Spinner B. Little Giant Slack Puller

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instituted a priorities system over the allocation of new service. The purpose of this was to insure availability of facilities for military needs at all times.

Under the priorities system applications for service were divided into six categories, as follows: A-1—military authorities—official; A-2—civilian defense organizations, hospitals, doctors, key officers, civil personnel and business organizations directly connected with war activities; B-1—business institutions and individuals whose activities are necessary to normal conduct of business essential to the community; B-2—persons moving into new homes who have had telephones in their previous residences; C-1—business service not included above; C-2—residence service not included above.

Priorities of Service

CONTINUOUS surveys are maintained of all exchanges so that their complete facilities will not be absorbed by routine demands and to insure a margin of available facilities for military and other urgent needs.

It is important to note this priorities system was devised and put into effect before the War Production Board issued its amendment to Order L-50. The similarity between the two systems of telephone allocation priorities constitutes a remarkable coincidence. That devised by Mutual Telephone Company officials and Army Signal Corps officers is somewhat more rigid, but the divisions of classifications are practically the same.

Protection of the telephone system is a matter that has received close attention. Some of the provisions for this come under the heading of military secrets, but it can be said that certain vulnerable equipment has been placed underground and also that the main exchanges have received bombproofing and splinterproofing treatment. Reasons for such precautions are obvious; if the island of Oahu becomes the scene of actual combat, the telephone system will be of the greatest importance, virtually the nervous system of the entire community, and any failure in this phase of communications would constitute handicaps of extremely serious nature at such a time.

However, it goes without saying that the armed forces are not entirely dependent upon commercial communications. As a matter of fact they are well enough equipped with their own radios, field telephones and private post systems to get along extremely well on their own, from department headquarters to the most advanced field positions. Direct lines connect all posts and are in regular use. Each post has its own exchange and its own system, although some of these systems are none too modern and efficient.

(END)

2-Cent Refund on Telephone Line

Montgomery County today was richer by 2 cents as the result of a refund from the Chesapeake & Telephone Co. on a discontinued telephone in the Bethesda County Building.

On receipt of the refund yesterday County Controller Alexander K. Hancock told reporters: "Now we can balance the budget."

He recalled that Abraham Lincoln once walked a mile to repay a penny debt.

It cost the telephone company a 3-cent stamp to forward the refund.

Ohio Company Gets "Go Ahead" From WPB

The "go-ahead" order to proceed with the installation of dial phone equipment was recently received by The Geneva (Ohio) Telephone Co., from the War Production Board.

The order addressed to Clarence A. Beswick, manager, granted permission to complete the installation at Geneva, Perry and Madison, Ohio, the three exchanges controlled by the Geneva concern.

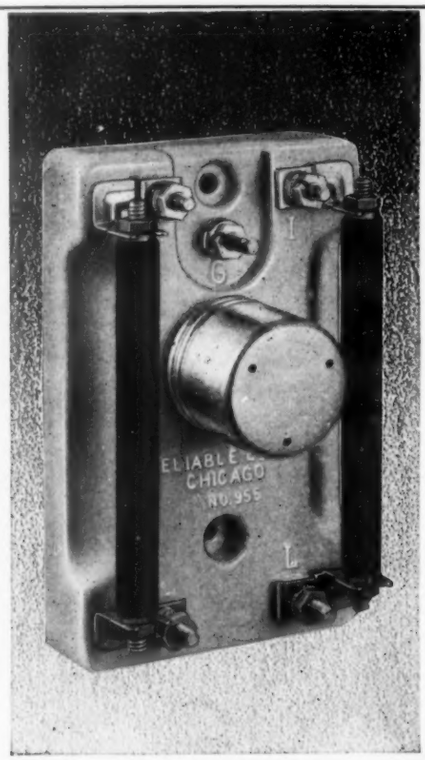
The dial system was originally scheduled for completion this spring, but work was delayed two months ago when the WPB ordered all such change overs stopped. An appeal from this order was made by the company.

Several Missouri Exchanges Change Hands

Joint application of C. L. Schieferdecker to sell and Harry and Pauline Ellis to purchase the Newark (Mo.) Telephone Exchange was filed with the Missouri Commission on May 22.

Application of E. F. Pearson and Nellie M. Pearson to purchase, own and operate the exchange at Avalon, Missouri, was filed on May 18.

Also filed with the Missouri Commission was the joint application of Walter and Venola Plein to sell and William Parrish to purchase the telephone exchange at Iberia. The Commission has issued order authorizing sale.



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—provides the latest improvements in indoor station protection. Its design simplicity and one-piece construction eliminates the need for asbestos mats and facilitates mounting. Base is low absorption porcelain. Reliable self-cleaning discharge blocks drain static discharges without leaving line grounded. Fuse clips and binding posts are treated to prevent season cracking and to retard corrosion. Available with No. 55 or No. 77 fuses as specified. Approved by fire Underwriters Laboratories.

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ELECTRIC COMPANY
OVER 30 YEARS SERVICE TO THE UTILITIES
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A New Approach to REGULATION

(Continued from page 22)

customers, augmented by the slogan "Let your dividends pay your light bill."

The matter of equity money, particularly in the earlier years, was a much more difficult problem. Equity funds do not tend to flow into new ventures unless there is an unusual opportunity for an unusual profit, and in a regulated industry, such opportunities were not readily visualized. Some such capital was obtained from the equipment manufacturers who had to take stock or nothing. In other cases stock was issued for properties or services. But the amount of hard cash available for common shares was limited, and as can readily be seen, the natural result was to build up a very heavy senior lien position of bonds, debentures and preferred stock. From a realistic viewpoint, considering the total amount of money required, the factor of turnover, and the profit limitations under regulation, it is doubtful if any alternative procedure would have been successful.

The Effects of Leverage

HOWEVER, due to improvements in the art and to the substantial growth of the industry, no adverse effects of this unbalance in the capital structure were witnessed until the depression period of 1932. As a matter of fact the leverage provided the common stocks turned out to be temporarily very profitable, because only a small increase in total operating income often produced relatively large increases in the amounts available for the equity. Unfortunately these increments in income were frequently capitalized and carried forward into holding company earnings on the expectation of an assured fair return coupled with continued growth over a long period of time.

What the industry and the investors did not anticipate was that while regulation could easily fix an upper limit on earnings, it was powerless—even if it so desired—to guarantee a lower limit. Actually, when the depression struck and revenues began to decline, the demand for lower rates was intensified, not only because of the decreased income of the customers, but also because it was felt inequitable that the utilities should be earning a normal return when business as a whole was operating at little or no profit.

The result of this condition on a highly leveraged capital structure was of course disasterous, especially in the case of a few super-holding companies in which the utilities were simply made the excuse for complicated financial promotions. When these inverted pyramids collapsed, it was considered a public utility failure; actually the utilities themselves were only indirectly involved and in most cases not at all responsible for what had occurred.

To guard against a repetition of such circumstances, there came into being various national regulatory bodies—the SEC, the FPC and GCC in particular—whose activities were superimposed on those of the State Commissions. Although the announced purposes of these commis-

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HEMINGRAYS don't tax your operating budget. They actually save money because they outlive poles, hardware and crossarms; "keep up their money-saving efforts for 50 years"—one prominent utility reports.

A SECRET glass "batch-mix"—climax of 87 years of experience—plus Owens-Illinois quality-controlled production, results in Hemingrays free of voids, stresses and strains . . . so homogeneous that sudden changes of temperature leave them unimpaired to work perfectly through sun, rain, hail, snow and sleet.

3 FAVORITES ON RURAL LINES Sturdy, all-purpose Hemingray Number 16. Hemingray Number 42, with its long leakage path keeping "toll" lines trouble free. Number 9, with its drip point petticoat for fast moisture run-off. Get samples.

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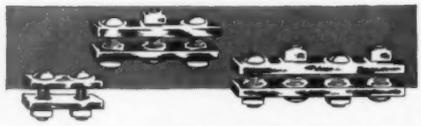
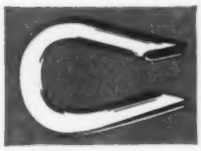
GUYING MATERIALS
that simplify and speed Line Installation



GUY CLAMPS . . . Light or heavy types, long clamping surfaces, greater wrench clearance.

STRAIN PLATES . . . Three types—standard; moulding (formed to fit 1" NELA std. ground wire moulding); guy hook.

GUY HOOKS . . . . Made from half oval steel bent with flat side toward pole to protect guy wire.



GUY THIMBLES . . . Grooved for strands 3/8" to 3/4" incl. Generous radius prevents kinking.

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ALL Oliver Guying Materials are made from specified steels, finished to accurate dimensions and protected by heavy hot dip galvanizing. Designed by experienced engineers, they are readily installed, long lasting.

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sions was the protection of the public, it frequently happened that in their effort to correct a situation which was considered undesirable, the remedies employed were so violent as to actually destroy substantial values. Simultaneously, the State Commissions were encouraged to order rate reductions wherever possible and finally the Federal Government itself either directly, or through subsidies to local administrations, began to encourage the construction of competitive publically owned systems.

Loss of the Equity Market

ALL of these factors combined to produce new prejudices against the equity ownership of public utilities, in spite of the fact that managements were in many cases able to maintain fairly good operating earnings. A favorable element in this connection was the declining interest rate on high-grade bonds, permitting large savings through refunding of senior securities. By contrast the market for new stock financing disappeared and even bond money was not available to marginal concerns in which there was any apparent element of risk. Reference to Chart "A" demonstrates vividly the declining popularity of utility stocks. Six years ago, the average investor was willing to pay $100 for $6 of earnings in the best utility shares. In April of the current year, the same shares were selling on a 14% basis! Stated in another way, **no one with money to invest** was willing to buy these stocks unless he received an average of **14 cents** in earning power for each and every dollar invested! Is it any wonder that the number of utility equity issues sold to the public in recent years can be counted on the fingers? Obviously if no one is willing to buy a security except on a 14% basis, and earnings are only 6% or 7% or less, the result is an impasse.

Federal Income Taxes & the War Effort

THE straw which now threatens to break the camel's back, and which may be said to be largely responsible for the latest sinking spell in the utilities, has been the proposed new Federal tax bill. To industry in general, the new taxes are heavy, but through 1941, at least, the majority of companies were able to report increased net earnings, **in spite** of greatly increased taxes. Reference to the April, 1942, issue of the National City Bank Bulletin indicates that 2,540 major corporations, with an aggregate net worth of 57 billion dollars, enjoyed an average gain in net income for 1941 over 1940 of exactly 20%. Included in this group were 151 utilities with a net worth of nine billion dollars, which reported a composite **loss** in net income of 5% in the same period. What happened, of course, was that the majority of industrial concerns have not been able to increase their volume of business, but have either increased their selling prices or decreased their costs to a point where the net, after taxes, was larger in 1941 than in 1940. The utilities had an increase in volume also, but the average selling price of their product continued, under the artificial functioning of regulation, **to decrease,** although operating costs and taxes **increased** substantially.

As if the problems of declining unit revenues was not a sufficient hurdle to overcome, the average utility faces a further embarassment arising out of the peculiarly adverse effect of a heavy income tax on a corporation having a large percentage of preferred stock in its capital structure. Federal taxes are calculated on net income after bond interest, which includes the income available for the preferred, but the actual payment of this sum comes entirely out of the earnings for the common, at least as long as any such earnings are available. Thus if the capitalization is half in 6% preferred and half in common, and earnings are 6% **before** taxes on the total, a tax of 50% would have the effect of wiping out completely the earnings for the common stock. Unfortunately, too, the possibility of recouping such losses through rate increases is complicated by the fact that a substantial part of any increases goes right back into more taxes. The net result of these various factors, as reflected in the securities markets, has been an almost complete collapse of confidence in utility equities on the part of the investing public.

Added to all the above, the present war effort is imposing on the utilities the greatest demands for service in their history, with a cor-

Monthly Station Barometer

Due to discontinuation of many of the large telephone companies in announcing installation figures, our Monthly Station Barometer has been discontinued for the duration.

Many companies in the East seem to think this advisable and TELEPHONE ENGINEER will bow to their wishes that these figures remain unpublished.

responding need for further funds for new construction. How to raise such new capital when that already outstanding is selling at bankruptcy prices is a question that becomes more difficult to answer as each day passes. It seems crystal clear, however, that until the confidence of the investors can be restored to the point where they are again willing to buy utility stocks on a 7% or 8% basis, or until earnings increase to a 14% basis, or some compromise between these two extremes can be effected, there will be **no new equity money** available to the utility industry.

Post-War Outlook Requires New Rate-Making Approach

WHILE this conclusion in itself is practical evidence of an unsatisfactory financial condition, the present difficulties will undoubtedly be accentuated by a decreased output upon returning to peacetime operations. Power production, telephone installations, etc., are currently at all time record highs. If in a return to normal or subnormal business activity, utilities were to suffer a corresponding contraction in gross revenues, it is obvious that the effect on net would produce a repetition of the results of 1932, with the added burden of current high taxes. Since bond interest rates are already low, there presumably would be no possibilities of relief through refunding, as in the last decade.

In such circumstances, discussion as to the "elements of value" become purely academic. Previous reference standards are all out of adjustment—with reproduction costs soaring, security prices are at all time lows—with gross revenues at new peaks, net is declining. Certainly if ever there was a time when a commonsense approach to rate making was needed, today is that time. The Supreme Court has provided the opportunity for application of the practical solution suggested in the Bluefield decision—let it be hoped the opportunity will not be neglected. The situation is a serious one, and demands the intelligent whole-hearted cooperation of the various commissions, the taxing authorities and the representatives of the industry, if a solution is to be effected in time to avoid complete financial chaos in this vital segment of our national economy.

Record

The Illinois Bell Telephone Company reported May 27 that a new record of 1,000 long distance calls from Chicago to Washington were completed that day.

Kansas Commission Postpones Hearing Indefinitely

The Kansas Corporation Commission June 1 postponed without date its hearings on the investigation of the Southwestern Bell's application for a telephone rate increase in seven Kansas towns and a reduction in one community. The rate increase would have amounted to approximately $130,000 a year and covered towns of 4,000 to 6,000 population. At El Paso, Texas, the city council also, May 28, tabled its inquiry in the Mountain States telephone rate case.

Remember When Dept.

The War Department had only one telephone, located in the hall, in 1900, a messenger retiring from service after 42 years recalled May 31 in reminiscing about his years with the Department. The messenger, William H. Henderson, who served with every Army Chief of Staff from 1900 to 1942, also recalled that during World War I President Wilson walked each week to the War Department headquarters at 20 Jackson Place, almost directly across from the White House, to confer with the Secretary of War and Chief of Staff.

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The design of the Raytheon **RectiChargeR** enables its output to follow the load and assume full responsibility for keeping your storage batteries fully charged, neither burning them up by overcharging nor starving them by undercharging.

Battery life may be increased as much as 40%.

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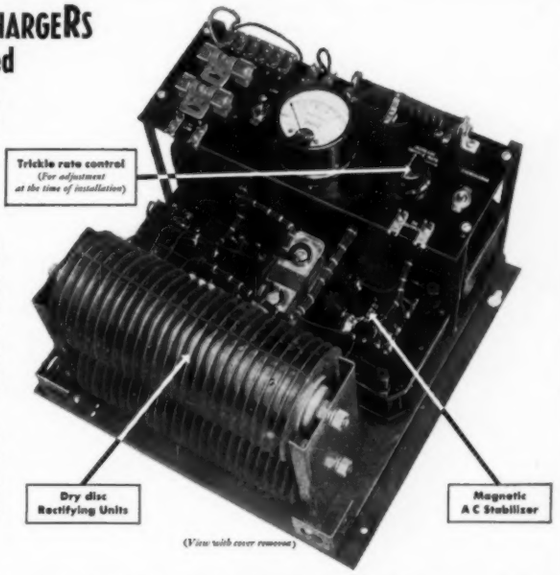

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Three complete tools — longest section 48 in. — EASILY CARRIED IN SMALL CAR OR MOTORCYCLE.

	Length	Weight
No. 1-WE Pruner Head Section	30 in.	2-¾ lbs.
No. 44-WE Saw Head Section	30 in.	1-½ lbs.
Intermediate Extra Section	48 in.	1-½ lbs.
Bottom Extra Section	48 in.	1-¼ lbs.
No. 1-WE Pike Pole Attachment	8 in.	1-½ lbs.
TOTAL WEIGHT		8-½ lbs.

This combination can be quickly and easily assembled to make any of these three tools:

1 Heavy Duty Tree Trimmer (1-¾" cap.)	10-½ ft.
1 Fast-cutting Pole Saw	10-½ ft.
1 Test Pile Pole	8-½ ft.

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Highlights of the Communications News

(Continued from page 20)

missions report in the case on June 3, 1941.

Both "upon the facts and under the law the Federal Communications Commission by its order (in the Kansas City case) seeks to exercise jurisdiction NOT possessed by it," the three-judge Federal Court, composed of Circuit Judge Riddick and District Judges Reeves and Otis, ruled. Throughout the finding, the three Federal judges held it "obviously was the purpose of Congress to exclude the jurisdiction of the Commission in situations precisely like the one here discussed" (citing the views of former Senator Dill, then chairman of the Senate Interstate Commerce Committee, during the Communications Act's enactment); and "neither the Commission nor the courts should by too strict and narrow a construction of the law defeat such a clear intention."

The provisions of the Communications Act, the court determined, properly and "perfectly" apply to such exchange areas as in Kansas City and interstate interzone message charges do not imperil the exemption from Federal jurisdiction clearly contemplated by Congress.

The FCC also was rebuked in another portion of the court's opinion, which declared the Commission seeks to defeat the Congressional exemption or limitation and reassert its jurisdiction by a strict construction of the last phrase of Section 3 (r), the definition of "telephone exchange service" in the Communications Act. The court held that these words should not be considered as an "excerpt" but in the light of the context and language in the rest of the provision and elsewhere in the law. If this interpretation was sustained the Congressional exemption would be defeated, and the court stated "the legislation would have been in vain and the effort to recognize local supervisory authority would have been a mere gesture and a sham and deception."

The regulation of these charges by proper state commissions was viewed by the court as the practical interpretation of the fight of the central telephone exchange to classify customers and provide zones in fixing rates. This is a course of action and policy well understood and recognized under the law, the court stated, stressing that "Congress must have had this in mind when it provided the exemption from Federal supervision."

The definition of telephone toll service in the Communications Act had an undoubted purpose, the court held, in excluding message charges within a single exchange area. The toll charge is not only between different exchange areas but is a service not included in contracts with subscribers for exchange service.

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VINCENT RARE GAS RELAY

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No Moving Parts
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Eliminates unbalance noises in metallic party lines employing divided ringing to ground. Works with either harmonic or code ringing.

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Oklahoma-Arkansas Hearing

HEARINGS on the petition of the Oklahoma-Arkansas Telephone Co. for an enforced connection with the toll lines of the Southwestern Bell were concluded early in June in Washington after charges by Southwestern Bell witnesses of alleged fraudulent representations by Oklahoma-Arkansas officials and alleged discrepancies in the company's accounts filed with the Oklahoma Commission.

The allegations were designed to show that the Commission would render a disservice to the public if it orders a physical toll connection of the Fort Smith, Ark., to Poteau, Okla., line of the Oklahoma-Arkansas Co., because of the charges that the company is financially and morally lacking in integrity.

The Southwestern Bell also declared that the Oklahoma-Arkansas Co. had made a number of offers to sell its facilities to the former company at inflated prices, ranging from $250,000 to $500,000, when its property was valued on accounts submitted to the Oklahoma Corporation Commission at $118,000 original cost and $94,800 when depreciated.

George F. Winters, partner of the auditor's firm of Barrow, Wade, Guthrie & Co., brought out in direct testimony that his examination of the sworn records of the Oklahoma-Arkansas Co. filed with the Oklahoma Commission had revealed numerous instances of discrepancies in the company's accounts, as well as manipulation of the books to permit the company to balance its records. Objections to the testimony of Mr. Winters, who displayed in excerpts of the Oklahoma-Arkansas reports to the state commission, presented as an exhibit, inconsistencies in the plant and equipment, capital stock, funded debt, good will, depreciation, and interest on liabilities accounts, by Oklahoma-Arkansas Co. Counsel C. C. Williams and FCC Attorney Daryal Myse were overruled by Commission Presiding Attorney Irwin.

Mr. Winters declared that the sworn annual reports of the Independent company for the years 1924 and 1925 showed gross operating incomes of $41,821 and $40,885 respectively, although Oklahoma-Arkansas President, I. H. Nakdimen, in letters offered as evidence by retired Southwestern Bell Vice President for Oklahoma R. J. Benzel, had set the figure at $55,000 to $60,000.

The sessions were concluded without repetition of the statements of two Oklahoma-Arkansas Co. employees, called to the Washington hearings, that FCC Engineer George Dempsey had informed them the lines were in good condition. Mr. Dempsey, at the previous Fort Smith hearings, had declared that the lines were in no state to give satisfactory service, but after he was on his way back to Washington the Oklahoma-Arkansas representatives indicated that his inspection was cursory and incomplete, and declared that he had informed them in private that the lines were in serviceable shape.

The witnesses denied that they implied the Commission engineer had made only a brief inspection of the facilities, and did not repeat their allegations regarding his purported statement to them, which was contrary to Mr. Dempsey's report to the FCC.

Telegraph Merger

TWO war steps affecting telegraph communications may give impetus

Work of WPB Communications Branch

To illustrate the tremendous pressure and burden of work which confronts the War Production Board's Communications Branch are these figures showing the flow of applications and other filings during a recent typical week in May.

The Communications Branch during this week received and processed about 1,700 priority rating applications and appeals. There were about 600 PD1a and PD-200 priority rating applications; over 60 PD1a L. V. (low value) priority preference requests; and around 525 appeals on the L-41 and L-50 orders.

to the legislation and later consummation of the telegraph merger plans.

One was the recent drastic order of the Defense Communications Board under which all domestic radiotelegraph circuits will be closed down by June 30. This affected the domestic radiotelegraph service of RCA Communications, Mackay Radio and Telegraph, Press Wireless, Tropical Radiotelegraph, Globe Wireless, and several other smaller companies. The telegraph merger plan calls for the ending of radiotelegraph competition in the United States with the projected consolidated telegraph company of the Western Union and Postal Telegraph systems. The other was the taking over by the Army Signal Corps of the Globe Wireless radiotelegraph network which serves several Pacific Coast cities and a number of Far Eastern points under a lease contract, which would eliminate the Globe system from the field of international communications during the war.

Meanwhile the Senate Interstate Commerce Subcommittee was preparing a revised permissive telegraph merger bill to be submitted to the Senate for passage.

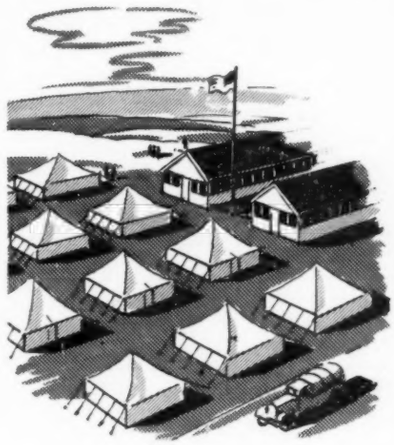
(END)

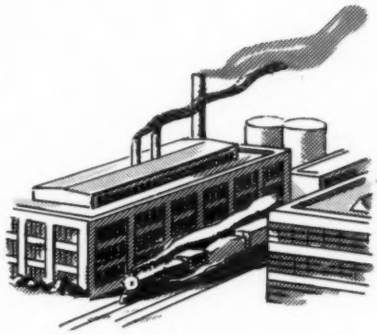
Buys War Bonds 100%

During May, John H. Agee, general manager of the Lincoln Tel. & Tel. Co., reported to county headquarters that all of the company's employees had pledged a portion of their salaries for the purchase of United States War Savings Bonds and Stamps. The Lincoln company has 1,088 employees in southeast Nebraska, 489 of them in the Lincoln district.

Now—"GRAY"...

IS RED, WHITE AND BLUE





Ordinarily you don't associate patriotism and paystations; NOW you can. Because of the present tremendous demand and because of conditions imposed by our wartime economy, there are hundreds of opportunities to render real service—service which might otherwise be denied people. For example:

IN ARMY CAMPS

Obviously soldiers (or sailors, or marines) can't have their own telephones. The more paystations made available to them the less time they'll have to stand in line waiting to make calls. To them those calls are important and they deserve any added service we can give them.

IN PRODUCTION CENTERS

Everywhere giant plants using hundreds of thousands of workers are going up. Naturally in and near these places there will be a great demand for telephone service . . . in restaurants, gas stations, in stores and in the plants themselves.

IN HOUSING DEVELOPMENTS

Brand new cities, villages turned into cities, spreading suburban developments . . . all almost overnight. It may be hard to furnish individual telephones to many people in these places but paystations will help give them the service they might not otherwise have.

And—remember—paystations pay for themselves.

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Wire Chief's Training Course

(Continued from page 24)

Table No. 1—Size Strand for Various Size Cables

Size	Maximum Size Cables		
	24 ga.	22 ga.	19 ga.
6,000 lb.	200	150	75
10,000 lb.	600	400	200
16,000 lb.	1200	900	455

Table No. 2—Size Ring for Various Size Cables

Cable Size (No. of Pairs)			Ring Diameter
24 ga.	22 ga.	19 ga.	
11 to 100	11 to 100	6 to 75	1½"
150 to 200	150	—	2"
300 to 600	200 to 400	100 to 200	2½"
900 to 1200	600 to 900	300 to 455	3½"

from the existing cable. On joint use poles any added cable should be placed above or below the existing cable in order to insure a clear climbing space on one side of the pole.

Messenger Stringing Procedure

THERE are various methods in common use for placing messenger. The most popular procedure is to pull the strand out along the base of the poles and then after a full section has been pulled out, it is carried up the poles and placed in the suspension clamps which are tightened sufficiently to keep the strand from jumping out, yet permitting it to be pulled through the clamp when pulling the messenger to the proper tension.

Considerable care should be taken to avoid damage to the strand as a result of nicking or kinking when it is pulled out. Precautions should be taken at road crossings to avoid danger to the public. Where trees or other obstacles are encountered, it may be necessary to thread the strand thru or above obstacles so that no difficulty will be encountered when the strand is pulled in place.

After the strand has been pulled out and carried up the poles, one end should be deadended as shown in Figure 5. The strand should then be placed under tension, using a heavy 6" triple sheave block attached to the free end by means of a Chicago type strand grip. The slack blocks are fastened to the deaded pole just below the point of attachment of the downguy. The fall rope of a block and tackle is attached to a truck and the strand pulled to the proper tension. It is preferable to pull the strand slightly greater than normal tension in order to set the anchors and then slack off the tension to the recommended value. The larger companies can well afford a strand dynamometer for checking cable tension while the smaller companies can use the oscillation method of determining the correct tension.

Connecting Messenger Strand

IT IS always desirable to place messenger so that it is in one piece between dead ends. On long runs it may be necessary to make splices.

The approved method of making a splice in a strand is to use a metal strand connector and three bolt clamps as shown in Figure 6. For 6,000 and 10,000 lb. strand a single three bolt clamp is adequate; for 16,000 lb. strand two 3-bolt clamps should be used.

Dead Ending the Strand

STRAND can be deadended either by the old style method of placing the strand twice around the pole and then fastening with a 3 bolt clamp by the use of a thimble eye through bolt. The thimble eye bolt is now widely used and has largely superseded the earlier method. If the "wrap method" is used, strain plates should be provided to prevent the strand from cutting into the pole.

Cable Ring Placing

WHERE cable is placed in cable rings the method of placing the rings is as follows:

Fig. 3—Principal items required in Cable Construction.

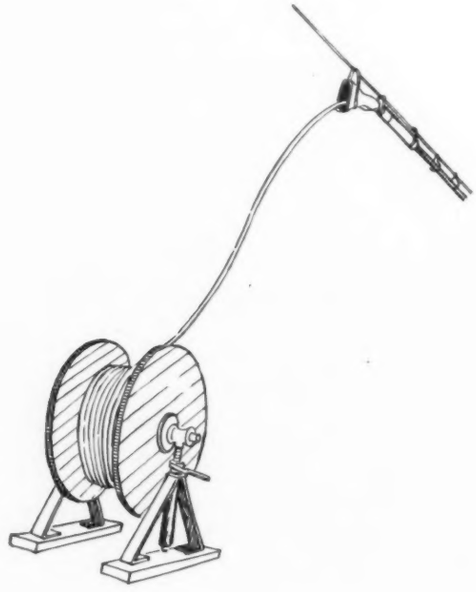

Fig. 7—Reel set-up for Pulling in Cable.

Fig. 4—Typical Tools Needed in Cable Construction Work.

A lineman must ride the messenger and attach cable rings at intervals of approximately 20 inches. The rings are carried in a canvas bucket attached to the cable car and the rings are snapped over a "pulling-in wire" or rope which is fastened to the cable car. Some companies use special rings with a wide bearing surface on each side of the pole to prevent ring cutting which usually is prevalent at the two rings next to the pole.

Pulling-in Cable

THE operation of placing cable in the rings requires considerable care as well as the proper equipment to avoid damage to the cable sheath. The customary method of pulling cable into rings is as follows:

The cable reel is placed approximately 15 feet back from the first ring and is raised on cable reel jacks so that it can revolve freely and so that the cable will feed from the top of the reel as shown in Fig. 7. **A cable guide** should be attached to the messenger as shown so that the sheath will not be damaged in passing into the first ring.

If a cable guide is not available a snatch block with a fairly large pulley can be fastened to the messenger and so arranged so that the cable will feed into the first ring without damage to the sheath. This arrangement however is not advisable with the larger size cables.

The pulling-in line should be attached to the cable by means of a **cable grip.** Ordinary 109 iron wire is amply strong for pulling in cable up to 150 pr. 24 ga. cable in lengths not to exceed 1,000 feet. For larger sizes a heavier pulling in line will be necessary. The end of the cable grip should be taped securely to the cable sheath to prevent its catching in the cable rings and also to increase the holding power of the grip.

At the far end of the pull, the pulling in line should be run through a snatch block at the top of the pole and attached to either a truck or a winch. The cable should be pulled in at a uniform speed and at a rate not to exceed 250 feet per minute. Cables larger than 100 pr. 22 ga. should have a lubricant applied to reduce the friction between the cable and the ring. Adjacent sections of cable should be lapped about 3 feet for splicing purposes.

Fig. 8—Placing Cable Directly from Cable Reel by Spinner Method.

Cramer

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They possess everything you seek in this type of instrument.

RELIABILITY
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Square or round meter type housing. Automatically and cumulatively register total operating time of plate and filament circuits.

Obtainable in minutes or hours.

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Faster ... Easier with

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Protek-Sorb Desiccant is approved and recommended by leading manufacturers and suppliers of telephone equipment.

Use Protek-Sorb Desiccant—avoid the hazards and inconveniences of out-dated methods of drying cable splices.

Your regular telephone jobber can supply you. Ask him for handbook instruction sheets.

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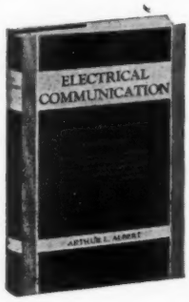

A study of the various specialized phases of electrical communication as related to the usages of modern communication systems. Nearly one-third of the content has been entirely rewritten and the remainder revised to incorporate recent advances. The main revision occurs in the chapters on Sound and Acoustics, Speech and Hearing, Electronics and Vacuum Tubes, Inductive Interference and Plant Protection, Electronic Applications in Wire Communication (especially the sections on Carriers and Repeaters), and Wireless Communication.

Order From Book Department

TELEPHONE ENGINEER

Telephone Engineer HANDBOOK TABLES

By B. C. Burden

File—General Data
Date—June 15, 1942

General

Subject — Magnet Wire Data

The table shown below gives the feet per pound and resistance per pound for various sizes of fine magnet wire.

FINE MAGNET WIRE.
Table of Resistances

Size B. & S	Diameter in inches	Ohms, Per Pound: Silk—Single	Silk—Double	Cotton—Single	Cotton—Double
20	.03196	3.23	3.17	3.15	3.02
21	.02846	5.12	5.02	4.97	4.72
22	.02535	8.12	7.96	7.87	7.44
23	.02257	12.90	12.65	12.45	11.7
24	.02010	20.45	19.65	19.65	18.25
25	.01790	32.4	31.5	30.9	28.45
26	.01594	51.3	49.7	48.5	44.3
27	.0142	71.4	71.3	76.5	68.8
28	.01264	129.	123.5	120.	106.5
29	.01126	204.	194.	190.5	164.
30	.01003	322.	306.5	294.5	252.
31	.008928	510.	477.	461.	384.5
32	.00795	803.	747.	717.	585.
33	.00708	1265.	1165.	1195.	880.
34	.006305	1995.	1810.	1715.	1315.
35	.005615	3140.	2820.	2640.	1960.
36	.005	4880.	4340.	4070.	2890.
37	.004453	7680.	6660.	6190.	4230.
38	.003965	12100.	10250.	9430.	6150.
39	.003531	18850.	15600.	14200.	8850.
40	.003145	29300.	23650.	21300.	12500.

FINE MAGNET WIRE.
Table of Approximate Feet per Pound

Size B. & S	Diameter in inches	Length, Feet Per Pound: Cotton—Single	Cotton—Double	Silk—Single	Silk—Double
20	.03196	211	298	319	212
21	.02846	389	370	398	389
22	.02535	491	461	504	493
23	.02257	624	584	645	631
24	.02010	778	745	795	779
25	.01790	958	903	1004	966
26	.01594	1188	1118	1240	1202
27	.0142	1533	1422	1615	1542
28	.01264	1903	1759	2023	1917
29	.01126	2461	2207	2625	2485
30	.01003	2893	2534	3325	2909
31	.008928	3483	2768	3820	3683
32	.00795	4414	3737	4876	4654
33	.00708	5688	4697	6243	5689
34	.006305	6400	6168	7757	7111
35	.005615	8393	6737	9660	8534
36	.005	9846	7877	11907	10039
37	.004453	11636	9309	13474	10666
38	.003965	13848	10666	16516	14222
39	.003531	18286	11907	22261	16516
40	.003145	24381	14222	26947	21333

Examination No. 15

CABLE CONSTRUCTION

1. What facts should a cable study disclose in advance of actual construction work?
2. Is the Spinner method of supporting cable approved by the larger companies?
3. What is the purpose of a cable extension arm?
4. Under what circumstances are guard arms used in connection with cable construction?
5. At what spacing are rings ordinarily placed?
6. What instrument is used in checking strand tension?
7. What size strand should be used to support 400 pr. 22 ga. cable?
8. What size ring is required for 600 pr. 24 ga. cable?
9. Describe briefly the two methods used in placing cable by the Spinner method.
10. Under what conditions are grade clamps required?

Cable supported in rings should be equipped with grade clamps, where the change in grade is in excess of 5 feet in each 100 feet. Grade clamps should be placed at the beginning of the grade and at every third pole on the grade. Grade Clamps should be placed about 2 or 3 feet out from the pole.

The Spinner Method of Supporting Cable

THE cable spinner method of supporting aerial cable involves a special cable spinner and a .091 galvanized iron spinner wire which is available in 300 foot coils.

The spinner revolves the wire around the cable and binds it tightly to the supporting strand.

In locations where it is possible to pull the cable reel trailer along the pole lead and where there is no intervening obstruction, the cable can be fed directly from the cable reel to the supporting strand thru a cable guide which is pulled ahead of the spinner. The spinner can thus make rapid progress.

Where this is not possible the cable will need to be pulled into rings which are spaced at intervals of approximately 10 feet instead of the usual 20 inches. The operator of the spinner must remove these rings as he comes to them.

Figure 8 illustrates how cable is placed directly from the reel by the spinner method.

Fig. 6—Standard Method of Making Splice in Supporting Strand.

Dear Mr. Smith:

I enjoy reading TELEPHONE ENGINEER very much, especially Wire Chief's Training Course. It is very interesting.

I depend a great deal on TELEPHONE ENGINEER to keep abreast of the times and changes within the telephone world.

Everett R. McKie
Colfax, Illinois

AERIAL CABLE
Construction
COSTS
Reduced 50%

The Neale Model B is designed for DOUBLE DUTY. Operates as efficiently on new construction as on Maintenance.

●

WATCH FOR ANNOUNCEMENT OF IMPORTANT DEVELOPMENTS IN SPINNING EQUIPMENT NEXT MONTH!

CABLE SPINNING EQUIPMENT CO.
TOPEKA, KAN.

"CRACK DOWN" AS YOU PLEASE . . . YOU'LL NEVER HURT YOUR ESTWING

• Crack down—as hard as you please — an Estwing can take it and come back for more. Not only that, but they're built with just that delicate touch of balance needed to pack an added wallop into your swing.

Tough? You bet they are! It's the way they're made—the "I" beam construction with laminated leather handle — as shown in the illustration at left.

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The AIR CORPS Radio Center

SINCE the entry of the United States into the present World War, Scott Field, Ill., home of the Army Air Corps "Radio University," already recognized as a vital center in the building of the world's greatest air force, has become even better known as an essential link in an all-out effort which will eventually keep 185,000 planes flying skyward to victory.

Scott Field is a great melting pot, where men from every state of the union come to undergo a complete and comprehensive course in radio communications. It is where they learn the real meaning behind the phrase, "Keep 'em Flying."

Often playing much the same role as the unsung hero who runs interference for the player who makes the touchdown, the radio operator is, nevertheless, vital to modern warfare. Without him there could be no blitzkrieg, no adaquate defense against it. Radio communication is necessary in coordinating attacks, and keeping alive the essential plane-to-ground contact that so often spells the difference between a safe return and a crash.

For every plane in the air corps today, with the exception of pursuit ships, two radio men are necessary. Theirs is a part without glory, without headlines, without fame, and often without appreciation from the civilian population.

But to the pilots, who depend upon the beam to get them safely home, who depend upon perfect radio signals and messages to steer them in the correct maneuvers, the role of the radio operator is not to be taken lightly. It is a part

1.—Colonel Wolcott P. Hayes, A. C., Commandant of Scott Field.
2.—Radio operators must have a thorough knowledge of antennas.
3.—The "Flying Class Room" accommodates 12 students. It is a huge bomber with radio apparatus installed for each student.
4.—An instructor corrects a student's figures.
5.—Part of a class of code students.

to be played with pride, with no apologies.

And Scott Field is supplying these communications men now at an ever-increasing pace—that is the role it is playing in national defense.

Training in communications at the Scott Field Radio school is no hit-and-miss affair. A well-rounded study of the radio set itself, actual mechanics, courses in code, transmitters and receivers, all are included in the curriculum.

It takes trained ears to decode the messages, skilled fingers to tap them out, complete all-around knowledge to repair the sets in time of breakdown, good pronunciation and clear enunciation to send messages verbally, a well-coordinated mentality, and cool, calm disposition to handle the sets during emergencies and stress. To meet these requirements, Scott Field is annually turning out thousands of trained experts, "The Eyes and Ears of the Air Corps." Many of these are young men who have had experience in allied lines. Former telephone and telegraph company employes are found by the score in the army's numerous radio and signal sections, for they, like the radio amateurs of pre-war days, fit into the military communications picture with great ease. Basically trained, they quickly rise from private to non-commissioned officer grades.

Scott Field today is a great step from the post as it existed in 1917, when it was founded as a base for training flyers for the World war. The field then was only a square mile of land located in St. Clair county in Southern Illinois, and was named in honor of Corp. Frank W. Scott, who met his death in an experimental flight at the first Army Aviation school at College Park, Md., in 1912.

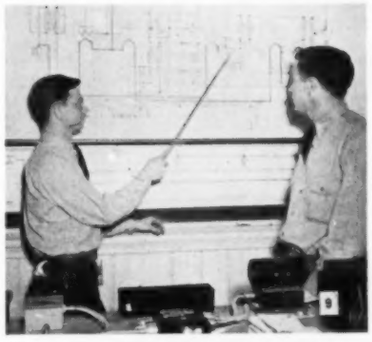
During 1920 the War department used Scott Field as an experimental base for lighter-than-air craft. However, with the passing of years it became apparent that such craft would be of little use in future warfare, so in 1938 Scott Field underwent a great transfiguration. It received a complete face-lifting through the process of a building program which cost $7,500,000, and which covered the field with new barracks, officers' quarters, hangars, and recreational buildings.

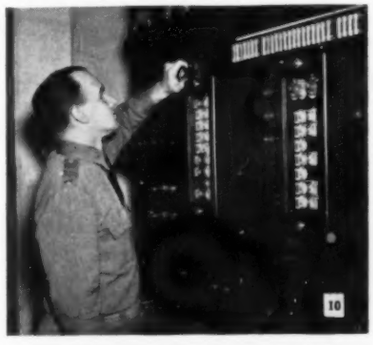
The training program occupies the biggest part of the students' time at Scott Field, but facilities for relaxation and recreation have been adequately provided. A city within itself, the field furnishes a harmonizing contrast of work and play. There is a spirit of teamwork mixed in the proper proportions with a definite fraternalism, which maintains a morale that makes it possible to produce the world's greatest radio operators, the men who "Keep 'em Flying!"

Dayrooms equipped with game tables, streamlined lounging chairs, and soft drink dispensers are added comforts for each squadron. In addition there are two service clubs where there are recreational accommodations for large numbers of the personnel, and lunch stands where the soldiers may buy refreshments. Combination radio and phonographs furnish music for the men spending their leisure hours in the clubs.

Libraries, shows, athletic events, and special programs furnish an endless chain of entertainment for all personnel. The men play hard just as they work hard, but all the time they are growing into expert radio operators of tomorrow. They are destined to play a major role in the destiny of the United States Air Corps.

The present commanding officer at Scott Field is Colonel Wolcott P. Hayes, who arrived at the post in July, 1940. Col. Hayes joined the army in 1917, taking an examination for a commission in the cavalry. In December, he was promoted to first lieutenant, and in July, 1918, transferred to the Philippine Islands with the rank of captain. While here he was transferred to the Air Corps, later to be advanced to his present rank in that branch. Col. Hayes holds ratings as command pilot, combat observer and technical observer.





6.—A mobile radio field unit.
7.—A study in transmitters.
8.—The code comes in.
9.—An instructor explains a circuit diagram to a student.
10.—Lt. Bradford H. Well. Signal Corps, Post Signal Officer, operating a new power board.
11.—Army posts need teletype systems too. Here, Pvts. Howard F. Bartholomew of Elgin, Ill. and Melvin J. Erps, Davenport, Iowa, are shown sending messages.
12.—Part of the mobile unit's transmitter.

U. S. Phones Exceed Axis Seven Times

THE United States has seven times as many telephones for every 100 people as the Axis powers. America's six largest cities contain all told more telephon than Germany and Austria combined. New York City has more than the entire Japanese Empire, although the latter contains nearly 20 times as many people. Texas alone has more telephones than Italy.

These comparisons come from a survey of the latest available world telephone statistics recently completed by the American Telephone and Telegraph Company. The three Axis powers and their pre-war dominions, this survey shows, average only 2.34 telephones for every 100 inhabitants, whereas on January 1, 1941, this country had 16.56 telephones for every 100 people.

One-Half Phones Here

Using estimates in the case of those countries for which no recent official data are available due to the war, a world total of 44,189,669 telephones is indicated as of January 1, 1941. At the present time it is likely that over 46 million telephones are in service, with more than one-half of the world's telephones being in the United States and about one-third in Europe. The net gain in the number of telephones in the world during 1940 was more than one and a half million, of which 1,100,000 was accounted for by the United States. During the year 1941 the net telephone gain in the United States alone was 1,593,000, bringing this nation's total from 21,928,182 at the beginning of 1941 to 23,521,000 at the end of that year.

Telephones operated by private companies account for more than 60 per cent of the world's total. Close to 58 per cent of all the telephones in the world are now operated from automatic central offices, including some 21 million "dial" telephones in the United States.

Outside the United States, the largest telephone systems in the world—ranked according to size—are to be found in Germany, Great Britain, France, Canada, Japan and Russia, each of which have at least one million telephones. When the population of the respective countries is taken into consideration, the leadership of the United States in point of telephone development is even more striking. On January 1, 1941, the ratio of 16.56 telephones for every 100 of the population in this country was followed by 14.26 for Sweden, 13.96 for New Zealand and 12.78 for Canada. The relative telephone density in the major countries of Europe—7.00 telephones per 100 population in Great Britain, 5.28 in Germany and 3.86 in France—is considerably below that prevailing in small towns and rural districts in this country.

Air-Raid Signal Demonstrated

PLACED on Manhattan Bridge and pointed toward City Hall, New York, an air-raid signal developed by the Bell Laboratories had an effective demonstration recently. Its sound was heard plainly above midday traffic in most of the downtown skyscraper area. As can be seen from the photograph, the device consists of a blower driven by one gasoline engine, a "rotor" driven by a second engine, and horns to direct the sound. By varying the speed of the second engine, the typical siren "wail" could be produced, but that was not done, lest the test be mistaken for an air-raid alarm. Laboratories engineers with sound meters were stationed at nine points in the area to be covered; they observed sound levels as much as fifteen decibels above the background of city noises. The engineers were satisfied that a wide area can be covered from a single source if it is well above nearby roof-tops.

The equipment was developed by the Bell Laboratories for the National Defense Research Council. Manufacturing information has been turned over to a number of concerns who will build it.

A few days later the apparatus was taken to Detroit for inspection by the engineering staff of a prospective manufacturer. Tests made from a rooftop and from the Ambassador Bridge elicited favorable comments of which the following from the Detroit Times is characteristic: "Detroit officials today were enthusiastic after the first trial of a new air-raid siren which, 'on the beam,' could be heard as far away from the downtown district as the Eight-Mile road. Fire Chief Edward C. Rumsey and Fire Commissioner James J. Mahon were enthusiastic, calling it the first 'real' siren tested here."

In the photograph F. K. Harvey holds the speed controls of the two engines, T. L. Dowey is at the "rotor" clutch and R. C. Jones, Jr., at the blower engine.

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SUB-CYCLE

MASTER RINGING CONVERTER

FOR MANY YEARS OF ECONOMICAL, DEPENDABLE SERVICE

BUILT FOR HEAVY DUTY

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Will meet most satisfactorily every requirement. It is as near foolproof as can be made. There are no moving parts, nothing to adjust, no routine maintenance required. No radio interference. Made in 6 Models for loads from small PBX to the large central office. Has an output capacity of 7½ watts to 40/50 watts.

ALSO PULSATORS

Sold by Leading Distributors

THE LORAIN PRODUCTS CORPORATION
LORAIN, OHIO

Homemade Pole Digger

We are indebted to Carl H. Price, who travels for Suttle Equipment Co., for a snapshot showing a homemade hole digger that is attached to an ordinary farm tractor. As is shown in the illustration the digger which is constructed out of the rear end transmission of a Model T Ford and other readily obtainable parts, will dig 5 ft. holes in less than a minute. The total cost was less than $25.00. The digger was built by Paul Tonkinson, Manager of the Farmers Mutual Telephone Company of Yarmouth, Iowa. Mr. Price also submits the conservation suggestion that telephone companies can pick up used 32 volt farm lighting plants which have been abandoned because of R.E.A. lines and can convert these to emergency charging units for common battery plants.

16 Affiliated Signal Corps Units

A total of 16 Affiliated Signal Corps Units have been sponsored by Independent telephone companies and State Associations according to Lt. Col. William C. Henry. This uses up the units which were to be sponsored for 1942, although additional units have been requested by the Signal Corps for sponsoring later in the year.

In a bulletin issued by the United States Independent Telephone Association, Col. Henry was complimented on his work. The State Associations and Independent operating companies were also applauded for their assistance to the Army in this worthwhile effort.

Communications Control At Martinique

One of the conditions of the American Government note in connection with the proposal for the United States to take over the West Indies possessions of France, especially Martinique, made public May 18, was cited to be "effective control by American authorities of wireless and telegraphic communications." The Vichy French Government had rejected the proposal of the United States, presented by Rear Admiral John H. Hoover of the U. S. Navy to the French High Commissioner in the West Indies, Admiral Georges Robert.

Fire

The Richfield (Kan,) Telephone Exchange suffered a fire last fortnight when the interior and switchboard installation was damaged. Prompt removal of the switchboard kept the damage minor. Explosion of a kerosene stove started the fire. Service was restored after two days.

Fire of an unknown origin caused considerable damage to the Belpre (Kan.) Telephone Company during mid-May. Extensive damage to the building and the contents melted the cable running into the switchboard. Lewis Chaney, owner, received priority assistance when he appeared before the War Production Board at Wichita, enabling the exchange to resume service.

Old-Fashioned Stencil Marking Is Too Costly

Premax Metal Letters, Figures and Tags Are Better

With labor at a premium, this is no time to waste hours with brush and stencil. Premax Metal Numbers, Markers and Tags cost less to install, have greater visibility and outlive the ordinary pole.

Premax Products

Division Chisholm-Ryder Co., Inc.
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DON'T TAKE CHANCES!

Guard Your Irreplaceable Equipment with

Pyrene TRADE MARK

Today maintenance of trucks, tires, tools and inside operating equipment assumes new importance. It will be nearly impossible to replace such things—probably for several years. Experienced operating and maintenance men have eliminated the obvious hazard of fire by keeping Pyrene Extinguishers handy—on guard!

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Vacation Varieties!

Play *Harder* to Work *Harder* for *Quicker* VICTORY!

Conserve your health . . . serve Victory's cause better by feeling your best. "Take time out" at regular intervals . . . give yourself a fresh start . . . add to your energy by choosing one of these "Vacation Varieties" spots and let nature put you back in your old stride . . .

4 Bright Stars on Your *VacationVarieties* Map!

MOUNTAIN LAKE HOTEL

★ *Cool Mountain Lake, Virginia* . . . Enjoy an invigorating vacation in the mountains . . . fishing . . . mountain climbing . . . horseback riding, etc.

Hotel BUCCANEER—Hotel GALVEZ

★ *Romantic Galveston* . . . is truly a city of "Vacation Varieties" . . . World's finest surf bathing . . . deep-sea, surf, bay and bayou fishing . . .

JUNG Hotel—Hotel DESOTO

★ *Quaint New Orleans* . . . America's Most Interesting City . . . Stop at one of these modern, conveniently located hotels . .

HOTEL FALLS

★ *Marlin, Texas—"The Carlsbad of America"* . . . "Visited yearly by thousands who come to stay back," rest or play . . . Stop at . . .

Write for literature to hotel or
P. O. Box 59—Galveston, Texas

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NATIONAL HOTELS

ALABAMA
Hotel Admiral Semmes . . . . . Mobile
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Hotel DeSoto . . . . . New Orleans

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Hotel Lamar . . . . . Meridian

NEBRASKA
Hotel Paxton . . . . . Omaha

NEW MEXICO
Hotel Clovis . . . . . Clovis

OKLAHOMA
Oklahoma Biltmore . . . . . Oklahoma City
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SOUTH CAROLINA
Hotel Wade Hampton . . . . . Columbia

TEXAS
Hotel Alice . . . . . Alice
Hotel Stephen F. Austin . . . . . Austin
Hotel Edson . . . . . Beaumont
Hotel Settles . . . . . Big Spring
Hotel Brownwood . . . . . Brownwood
Hotel Southern . . . . . Brownwood
Hotel Laguna . . . . . Cisco
Hotel Cortez . . . . . El Paso
Hotel Texas . . . . . Fort Worth
Hotel Buccaneer . . . . . Galveston
Hotel Galvez . . . . . Galveston
Hotel Jean LaFitte . . . . . Galveston
Coronado Courts . . . . . Galveston
Jack Tar Court . . . . . Galveston
Miramar Court . . . . . Galveston
Hotel Cavalier . . . . . Galveston
Hotel Plaza . . . . . Laredo
Hotel Lubbock . . . . . Lubbock
Hotel Falls . . . . . Marlin
Hotel Cactus . . . . . San Angelo
Angeles Courts . . . . . San Antonio

VIRGINIA
Mountain Lake Hotel . . . . . Mountain Lake

Affiliated NATIONAL HOTELS

HOST TO THE NATION

SERVING 10 STATES AND OUR NATION'S CAPITAL

The "Walkie Talkie"

Many are the duties of a soldier. Here we see one as a traveling telephone booth. This photograph shows a "Walkie Talkie" being used by the United States Army Signal Corps at an outpost. The palm microphone, the head band receiver and the connecting equipment shown here are being made by the Kellogg Switchboard & Supply Company of Chicago to give the Army front line information on the situation in the field. The telephone is the mouth and ears of our armed forces.

Employment & Payrolls Indicate Decrease

Employment and total payrolls in the telephone and telegraph industries decreased slightly in February from the previous month, figures released March 31 by the Department of Labor show, but showed a considerable rise over February, 1941. Employment was 89.7, based on 1929 as 100, a decline of 0.8 from January, 1942, but up 10.9 from the preceding February. Total payrolls were 120.8, computed on the same basis, a drop of 0.1 from January, but an increase of 15.9 from February, 1941.

Tax Collections Increase

Nearly five times as much collected from users of communications services, including local telephone subscribers, by the Bureau of Internal Revenue in February as in the corresponding month of 1941, it was revealed recently in the publication of the month's revenue collections. Taxes on toll telephone, telegraph, radio, and cable service were $3,110,007, while local telephone levy revenues were $2,125,530. Last February's communications service tax receipts were $1,143,500.

LETTERS

from TELEPHONE ENGINEER readers

Dear Mr. Smith:

Please find enclosed our check for $2.50 for two years subscription to TELEPHONE ENGINEER and Fortnightly TELEPHONE ENGINEER.

We enjoy reading these fine articles in your magazines and find them very helpful.

Yours very truly,
The Pawnee Telephone Company
M. R. Becker, Secretary

◆

Dear Mr. Smith:

In your April issue the poem "My Daddy" brings forth a poem written by a trouble shooter for a little girl's birthday. This little girl operates one of the few small exchanges left in this part of the country. The public relations of any phone company is determined in a great measure by the courteous manners of the "Hello Girl."

Another thought that I believe is in good taste at this time is the method of warning the community in case of air raid or disaster. A few days ago we connected the fire siren of a small town to a switch and button arrangement on the board of the local exchange so that the operator can blow the siren. We placed a relay in the siren control box so that only 6 volts is impressed on the control circuit. The operator blows the siren each Saturday at noon to test the circuit. The button was placed next to the ringing keys. We placed two switches at top of the board, one to cut out the button and the other across the button circuit so that the siren can be blown continuously.

Perhaps you will let down the bars once more and print a tribute to the girls that are the "soul" of the telephone plant.

Very truly yours,
NORMAN C. MULLER,
Oberlin, Ohio

(Ed. Note—*Here is the poem.*)

OUR "HELLO" GIRL

The board gave out it's warning sound,
She deftly pressed the first key down;
"Number please, I'm waiting, Thank You."
The dulcet voice rings clear and true.
A bit of eloquence to all
Pulsing o'er wires with each call;
Like warmth of an effulgent sun
She sends her smile to everyone.
She lives in a world all her own
With many friends she meets by phone.
She shares our sorrows and our care.
A friend indeed, when we dispair.
Her lovely voice does oft express
That she is one of comeliness.

L'Allegro

DCB Order No. 3 Applied To Telephone Industry

The Defense Communications Board by its Order No. 3, dated March 25, 1942, delegated authority to the Secretary of War and the Secretary of the Navy acting jointly or severally, to take such steps, institute such measures, and issue such regulations and orders as to them may seem necessary to safeguard all military and naval messages handled by means of radio and wire communications under the jurisdiction of the United States in order to insure that all such communications be transmitted rapidly, securely, and inviolate and further to insure that no communications of spurious origin, purporting to be a military or naval communication be transmitted by means of radio or wire communications.

The United States Independent Telephone Association recently received notification from the War Department regarding this order which informed them it may be necessary from time to time, during the war in which the United States is now engaged, by written order to require communications companies to remove from employment and to exclude from their operating premises (whether or not therein employed) any person regarding whom there exists evidence of subversive activities or of reasonable probability of inclinations to direct subversive activities against the United States, or whose employment or access the Secretary of War might for any other reason, consider detrimental to the safety of military and naval messages handled by means of commercial wire communications systems, including cable under the jurisdiction of the United States.

Michigan Association Sets Date for Convention

Word from H. R. Christianson, president of the Michigan Independent Telephone Association informs us that the dates of July 22 and 23 have been decided upon as the time for holding the annual convention of that Association. A full two-day program is being arranged. The convention, as in previous years, will be held at the Hotel Olds in Lansing, Michigan.

Telephone Man Honored

John A. Greene, vice president and general manager of the northeastern area of the Ohio Bell Telephone Co., was officially named Cuyahoga County's "first citizen" last fortnight. His selection for the honor, awarded annually, was announced by the 40 and 8 Society of American Legion and came as a complete surprise to Mr. Greene. The award was presented in recognition of Mr. Greene's activities while serving as president of the Cleveland Welfare Federation in 1940 and 1941.

Officer in Signal Corps

C. Dee Early, who for the past four years has been manager of the Citizens Telephone Company at Circleville, Ohio, has enlisted in the United States Army and left June 12, 1942 for Lexington, Kentucky, where he will start duty in the Signal Corps as a Second Lieutenant. Prior to his becoming manager of the Circleville company, Mr. Early was associated with The Portsmouth (Ohio) Home Telephone Company.

For Big Value in Wall Compacts

If you appreciate fine quality materials and efficient workmanship you will find them in Suttle telephones. They are always there to be seen on observation. They cost slightly more, but the extra value is larger than the extra cost. You profit thereby.

DEPEND ON SUTTLE

ACORN INSULATED WIRE

A Name that Commands Respect

WHEREVER the name "Acorn" is used in connection with wire it commands respect.

By rigid adherence to the highest standards of quality it shall be our aim, in the future as in the past, to continue to merit the respect and confidence of "Acorn" users.

ACORN INSULATED WIRE COMPANY, INC.
225 King Street, Brooklyn, N. Y.
LEICH SALES CORP., 427 W. Randolph Street, Chicago
LINDSAY SUPPLY CO., 4815 Superior Ave., Cleveland

Drop Wire—Bridle—Interior—Tree—Ground—Switchboard—Pothead—Cable Terminal—Instrument—Fixture—Buried Wire

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NATIONAL DEFENSE

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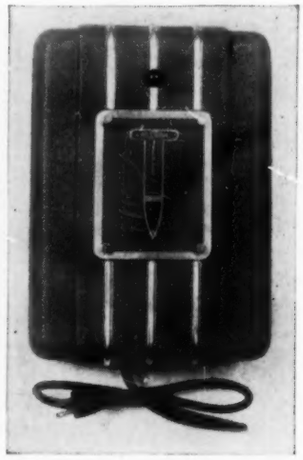
PRIORITY

While "all-out" National Defense co-operation is taxing our production facilities — We are proud we have been able to continue to make satisfactory deliveries to our government and to our customers in the telephone field.

TELERING

Reliable ringing service is essential in providing satisfactory telephone service.



Directly converts Commercial Alternating Current to Telephone Ringing Current—Current Consumption Negligible—Positively NO radio interference.

Use TELERING and provide the MOST reliable service at the LEAST cost.

Order through your jobber or direct from

TELKOR, Inc.
ELYRIA, OHIO

Kellogg Switchboard War Effort Recognized In Newspaper Article

The following article authored by David Goodman appeared in a recent issue of the Chicago Journal of Commerce, daily newspaper, under the title "War Firm's Usual Clients Receive Aid."

ALTHOUGH fully converted to war production, Kellogg Switchboard & Supply Co. has found it not only desirable but imperative to maintain contacts with its regular customers, the Independent telephone companies, in order that technical perfection of this vital section of the nation's communication system be maintained.

Since the firm is restricted as to the kind and quantity of material it can furnish these customers for maintenance, expansion and repair, Kellogg, nevertheless, by turning its sales force into a technical advisory staff, is aiding the telephone companies to conserve the facilities they already have.

According to C. D. Manning, executive assistant to the president of the firm, there are over 7,000 independently owned telephone systems, operating 11,000 of the 18,000 central exchanges in the country.

Fill Important Need

They connect chiefly the communities outside of the big cities with each other and with the national telephone network and thereby provide communication links of strategic importance to these communities, many of which recently have become the sites of important war industries and training camps.

Keeping a "weather eye" on the problems of postwar adjustment being created for Independent telephone companies by the war, Kellogg engineers are developing new products designed to meet these problems.

Among these is its new Masterbuilt "Type" K PBX switchboard, which combines the usually separate features of various types of switchboards.

Eliminates 'Bottleneck'

The new unit eliminates the "bottleneck" of handling many "special" switchboards in order to serve the varying demands of telephone systems, according to R. C. Krueger, advertising manager.

This unit, built for private branch exchanges, Kellogg officials point out, will play an important part after the war in relieving the backlog of replaceable units being built up by the telephone systems as a result of the conversion of telephone supply industries to war. The unit is adaptable to the magneto, dial or operator types of systems.

Production of the unit already has begun in response to orders from those companies with high priority ratings because of the need for serving defense areas.

The number of persons employed by the firm, according to Mr. Manning, has doubled in the last twelve months.

Plans Third Shift

Now running two shifts in several departments, the company plans to begin soon the development of a third shift. In anticipation of increased business, Kellogg in 1940 began installing new and faster machinery, thereby increasing its output at that time without adding shifts.

Another new development has been the coiled cord for telephones, made of rubber molded along with the wires into a permanently coiled cord to prevent snarling and the entanglement of wires on desk objects and corners.

The cord has been designed to eliminate strain on the conductor while providing a cord that retracts itself to a short length. Made in 5-foot lengths, the coil contracts to nine inches.

Adapts Materials

Stimulated by growing shortages and priority problems, the company has turned to new materials or fallen back on those formerly used in order to maintain output.

For chromium or nickel-plate and cadmium finishes, the company, according to F. G. Gardner, acting chief engineer, is employing a Parkerized finish produced by a chemical solution which forms a non-corrosive, surface coating. This is then either enamelled or dipped in oil to give a mat-black finish.

Mr. Gardner mentioned catopa, an acetylated cotton, as a product offering

unusual promise as a substitute for silk for insulating purposes.

The electrical insulating properties of catopa, according to Mr. Gardner, made it highly desirable for use in the wire and telephone industries. It is not yet being produced in this country, but it is understood that production here is contemplated.

Among other replacements being tried by Kellogg, are bakelite for aluminum wherever possible, such as in telephone transmitters and receiver housings; case-hardened steel for ringer gongs instead of brass; solder containing a low percentage of tin together with some silver to conserve tin; silver plating of terminals instead of nickel or other plating; celanese instead of silk for insulation, although celanese also is becoming scarce; and vinylite or other extruded plastics instead of rubber for wire covering.

Graybar Elects

At the annual meeting of the Board of Directors of the Graybar Electric Company, the following were re-elected to serve as officers of the Corporation: Mr. F. A. Ketcham, former President and now Chairman of the Board; Mr. A. H. Nicoll, President; Mr. G. F. Hessler, Mr. D. H. O'Brien, Mr. E. W. Cashman, Vice-Presidents, with headquarters in New York, and Mr. W. P. Hoagland, Chicago, Mr. W. J. Drury, New York, and Mr. A. L. Hallstrom, Philadelphia, as field Vice-Presidents.

Mr. E. W. Cashman, Vice-President, was appointed to serve on the Executive Committee, joining Mr. Drury, Mr. Hallstrom, Mr. Hoagland, Mr. Ketcham and Mr. Nicoll continuing members previously appointed.

CAPTAIN CLYDE C. SOWARDS, formerly with the New York Office of the Copperweld Steel Co., is now in the United States Army stationed at Milwaukee Ordnance Plant, Milwaukee, Wis.

Station Increase

The annual report to the stockholders of the New Ulm, Minn., Rural Telephone Company showed a net increase of 80 in the number of telephones connected with the exchange during the year ended December 13, 1941. There are 2,471 city and 683 rural, or a total of 3,154 phones in service. The net gain in telephones during the past ten years is 517.

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CAN PROLONG LIFE
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WIRE AND MESSENGER

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Reconstructed Equipment

Western Elec. No. 2C Ball type drops and jacks 250 ohm $7.75 per strip of 5—500 ohm @	$8.00
Western Elec. No. 317 2 or 3-bar 1000 or 2500 ohm Biased ringer compact type Wall Sets. Inside connection type $7.00 ea. Outside line connection type @	6.75
Western Elec. No. 293 Wood C. B. Straight line hotel sets with Booster Coil @	6.75
Western Elec. No. 12B Central Batt. Trunk and Toll Ckt. Repeating Coils @	1.50
Telering Ringing Machine Type Ex. Operates off 110 Volt A. C. Ckt.	21.00
Stromberg Carlson No. 9A Magneto Visual signals @	1.00
Stromberg Carlson No. 116 Jacks 10 per strip (Used with the above signals) @	4.00
W. E. Co. No. 1078 type Fuse rack 60 lines per rack with fuses @	5.00
W. E. Co. No. 1269 Protectors with heat coils 40 lines per bank @	20.00
Kellogg No. 2800 4-bar 1000 or 1600 ohm ringer compacts @	9.25
Kellogg No. 631 C. B. Steel hotel sets with Straight line ringer or 16-33-50 or 66 Cycle Harmonic complete with Booster Coil @	7.50
Monarch L. B. Transmitters with Back and Mouthpiece @	.90

REBUILT ELECTRIC EQUIPMENT CO.

1704 West 21st Place
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Ouster By Army Brings Installation Problem

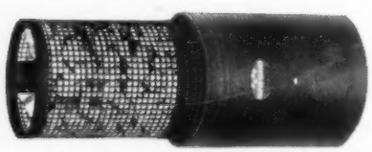
The troublesome difficulties of civilian telephone subscribers who are ousted from their business offices and establishments due to the necessities of the Army, Navy and other war government agencies and who then are unable to obtain telephones at their new locations may find a solution in the near future through WPB consideration of this problem.

Such situations have now been brought to the attention of the Federal courts. In Atlanta, where the telephone facilities have been taxed by war demands, a business concern, ousted from its office building when the latter was requisitioned by the War Department, received a favorable court decision June 4 that the Army had to provide it with telephone service in its new location.

Safeguards Equipment

Dehumidifying appliances being marketed under the name of "Water-Sorber" are said to provide protection against the effects of excess moisture. These units provide low-cost humidity control eliminating trouble to electrical equipment in control rooms and in storage rooms.

"Water-Sorber" units contain patented dehydrating chemical cubes that obsorb excess moisture in the air. No care is needed except to refill occasionally with the cubes.



This equipment is designed by engineers with wide experience in air-conditioning problems. For details write the manufacturers, The General Air Conditioning Corporation 4414 Appleton Street, Cincinnati, Ohio.

New Sound Film "Telephone Arsenal"

TELEPHONE ARSENAL, a new sound film produced by the Western Electric Company, has been released for public showings after having been "previewed" by more than 100,000

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Plain or Butt Treated
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VALENTINE CLARK CORPORATION
St. Paul, Minn.

POSITION WANTED — Young lady capable of handling heavy traffic at central office position or PBX board. In good standing with present company, but will consider offers from vital war programs or where there is a shortage of responsible girls. Address TELEPHONE ENGINEER, Box 8277.

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For the convenience of readers of Telephone Engineer

Buy V Defense Savings Bonds and Stamps

Classified Section

WANTED — A small magneto switchboard equipped with at least 35 drops. Good workable condition. State make, equipment and price in first letter. Address your reply to Box 8274, TELEPHONE ENGINEER.

COMMUNICATIONS EQUIPMENT INSTALLERS

Vacancies are available for men capable of installing central office telephone or similar equipment who are not already engaged in work directly essential to the war effort. Must be free for assignment anywhere. In reply state age, qualifications, past employers, experience, citizenship status, and number of dependents. Address Box 8275, c/o TELEPHONE ENGINEER.

Wanted to purchase telephone companies of 1000 stations or better. Address Box 8278, TELEPHONE ENGINEER.

SAVE!

YOUR OLD PAPERS

CALL THE

SALVATION ARMY

Western Electric employees and members of their families. The film is currently making the rounds of other Bell System locations from coast to coast.

TELEPHONE ARSENAL, as its title indicates, points the parallel between America's place as the arsenal of democracy and Western Electric's function as the arsenal of telephony for the Bell System and, to a large degree, the armed forces. The film was originally produced to dramatize for Western Electric workers the direct relationship between their efforts on the assembly line and military operations involving Western Electric products. The picture is, at the same time, a film document on "communications in wartime."

New Contact Arrangement

Substantial savings in production time when making electrical contact assemblies are made possible by the use of solder-flushed contacts supplied by the Gibson Electric Co., 8362 Frankstown Ave., Pittsburgh, Pa. In some instances, an operator can double the number of contact assemblies brazed in a given time by using solder-flushed contacts.

Solder-flushed contacts are contacts which have been coated on one side with silver solder so that they may be applied immediately to the terminal. The contact is simply placed on the terminal and brazed in an electric welder, eliminating the extra operation of placing a separate piece of solder between the contact and the terminal.

Fig. 1 illustrates the new method.

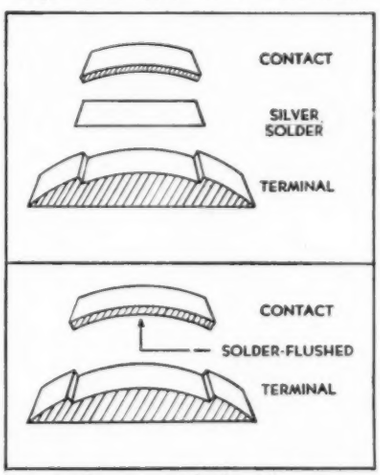

Fig. 1—Brazing method with ordinary contact. Below: Brazing with solder-flushed contacts eliminates need for inserting separate piece of solder.

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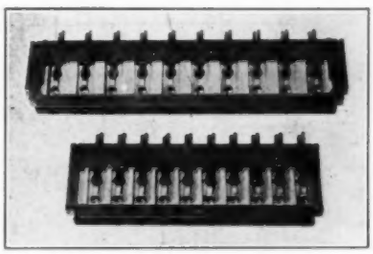

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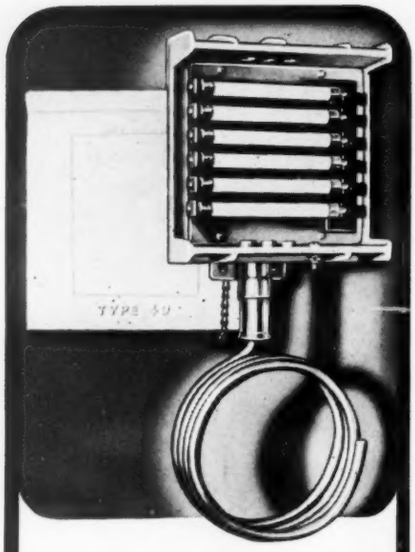

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When you need protection, you need **complete** protection —the kind provided by the Type 2105 Discharge Block.

This unique device is standard on all SANDS Protected Cable Terminals, as well as on all other SANDS protective products. It guards unfailingly against all high potentials, because it grounds heavy currents automatically. It resets itself after discharge, also—a feature that slices welcome dollars off your maintenance budget.

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TELEPHONE, SIGNALING AND COMMUNICATION APPARATUS

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Because of the "tension grip" of National Rings they do not slip along or jump off the messenger strand, so cable can be pulled from either direction and old cable pulled out and new installed without reringing.

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Standard Rings are Hot-Dip Galvanized. They can also be furnished in Copperweld and Calsun Bronze.

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Adjustable supports permit the cable being properly lined up with adjacent rings.

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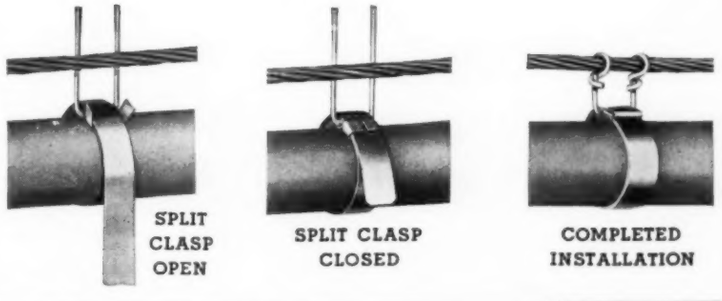

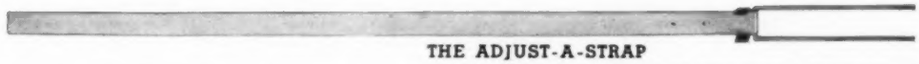

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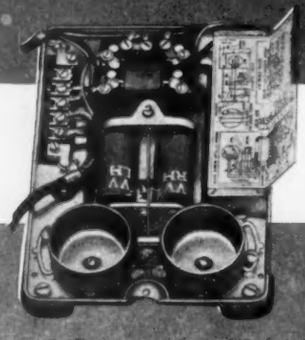

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